<110> PEPICELLI, CARMEN V.
      LEWIS, PAULA M.
      MCMAHON, ANDREW P.

<120> REGULATION OF LUNG TISSUE BY HEDGEHOG-LIKE POLYPEPTIDES,
      AND FORMULATIONS AND USES RELATED THERETO

<130> HUV-032.01

<140> 09/394,020
<141> 1999-09-10

<150> 60/099,952
<151> 1998-09-11

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<170> PatentIn Ver. 2.1

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1   5   10   15

tgc gct ctt tta gtc tcc tct ggg ctg act tgt gga cca ggc agg ggc   96
Cys Ala Leu Leu Val Ser Ser Gly Leu Thr Cys Gly Pro Gly Arg Gly
          20   25   30

att gga aaa agg agg cac ccc aaa aag ctg acc ccg tta gcc tat aag   144
Ile Gly Lys Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys
          35   40   45

cag ttt att ccc aat gtg gca gag aag acc cta ggg gcc agt gga aga   192
Gln Phe Ile Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg
      50   55   60

tat gaa ggg aag atc aca aga aac tcc gag aga ttt aaa gaa cta acc   240
Tyr Glu Gly Lys Ile Thr Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr
65   70   75   80

cca aat tac aac cct gac att att ttt aag gat gaa gag aac acg gga   288
Pro Asn Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly
              85   90   95

gct gac aga ctg atg act cag cgc tgc aag gac aag ctg aat gcc ctg   336
Ala Asp Arg Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ala Leu
          100   105   110

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gcg atc tcg gtg atg aac cag tgg ccc ggg gtg aag ctg cgg gtg acc     384
Ala Ile Ser Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg Val Thr
        115             120             125

gag ggc tgg gac gag gat ggc cat cac tcc gag gaa tcg ctg cac tac     432
Glu Gly Trp Asp Glu Asp Gly His His Ser Glu Glu Ser Leu His Tyr
    130             135             140

gag ggt cgc gcc gtg gac atc acc acg tcg gat cgg gac cgc agc aag     480
Glu Gly Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg Ser Lys
145             150             155             160

tac gga atg ctg gcc cgc ctc gcc gtc gag gcc ggc ttc gac tgg gtc     528
Tyr Gly Met Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val
            165             170             175

tac tac gag tcc aag gcg cac atc cac tgc tcc gtc aaa gca gaa aac     576
Tyr Tyr Glu Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn
        180             185             190

tca gtg gca gcg aaa tca gga ggc tgc ttc cct ggc tca gcc aca gtg     624
Ser Val Ala Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Thr Val
        195             200             205

cac ctg gag cat gga ggc acc aag ctg gtg aag gac ctg agc cct ggg     672
His Leu Glu His Gly Gly Thr Lys Leu Val Lys Asp Leu Ser Pro Gly
    210             215             220

gac cgc gtg ctg gct gct gac gcg gac ggc cgg ctg ctc tac agt gac     720
Asp Arg Val Leu Ala Ala Asp Ala Asp Gly Arg Leu Leu Tyr Ser Asp
225             230             235             240

ttc ctc acc ttc ctc gac cgg atg gac agc tcc cga aag ctc ttc tac     768
Phe Leu Thr Phe Leu Asp Arg Met Asp Ser Ser Arg Lys Leu Phe Tyr
            245             250             255

gtc atc gag acg cgg cag ccc cgg gcc cgg ctg cta ctg acg gcg gcc     816
Val Ile Glu Thr Arg Gln Pro Arg Ala Arg Leu Leu Leu Thr Ala Ala
        260             265             270

cac ctg ctc ttt gtg gcc ccc cag cac aac cag tcg gag gcc aca ggg     864
His Leu Leu Phe Val Ala Pro Gln His Asn Gln Ser Glu Ala Thr Gly
    275             280             285

tcc acc agt ggc cag gcg ctc ttc gcc agc aac gtg aag cct ggc caa     912
Ser Thr Ser Gly Gln Ala Leu Phe Ala Ser Asn Val Lys Pro Gly Gln
    290             295             300

cgt gtc tat gtg ctg ggc gag ggc ggg cag cag ctg ctg ccg gcg tct     960
Arg Val Tyr Val Leu Gly Glu Gly Gly Gln Gln Leu Leu Pro Ala Ser
305             310             315             320

gtc cac agc gtc tca ttg cgg gag gag gcg tcc gga gcc tac gcc cca     1008
Val His Ser Val Ser Leu Arg Glu Glu Ala Ser Gly Ala Tyr Ala Pro
            325             330             335
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ctc acc gcc cag ggc acc atc ctc atc aac cgg gtg ttg gcc tcc tgc    1056
Leu Thr Ala Gln Gly Thr Ile Leu Ile Asn Arg Val Leu Ala Ser Cys
            340             345                 350

tac gcc gtc atc gag gag cac agt tgg gcc cat tgg gcc ttc gca cca    1104
Tyr Ala Val Ile Glu Glu His Ser Trp Ala His Trp Ala Phe Ala Pro
            355             360                 365

ttc cgc ttg gct cag ggg ctg ctg gcc gcc ctc tgc cca gat ggg gcc    1152
Phe Arg Leu Ala Gln Gly Leu Leu Ala Ala Leu Cys Pro Asp Gly Ala
        370             375                 380

atc cct act gcc gcc acc acc acc act ggc atc cat tgg tac tca cgg    1200
Ile Pro Thr Ala Ala Thr Thr Thr Thr Gly Ile His Trp Tyr Ser Arg
385                 390                 395                 400

ctc ctc tac cgc atc ggc agc tgg gtg ctg gat ggt gac gcg ctg cat    1248
Leu Leu Tyr Arg Ile Gly Ser Trp Val Leu Asp Gly Asp Ala Leu His
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  1             5                  10                  15

gca cta tct gcc cag agc tgc ggg ccg ggc cga gga ccg gtt ggc cgg    96
Ala Leu Ser Ala Gln Ser Cys Gly Pro Gly Arg Gly Pro Val Gly Arg
                20                  25                  30

cgg cgt tat gtg cgc aag caa ctt gtg cct ctg cta tac aag cag ttt    144
Arg Arg Tyr Val Arg Lys Gln Leu Val Pro Leu Leu Tyr Lys Gln Phe
            35                  40                  45

gtg ccc agt atg ccc gag cgg acc ctg ggc gcg agt ggg cca gcg gag    192
Val Pro Ser Met Pro Glu Arg Thr Leu Gly Ala Ser Gly Pro Ala Glu
        50                  55                  60

ggg agg gta aca agg ggg tcg gag cgc ttc cgg gac ctc gta ccc aac    240
Gly Arg Val Thr Arg Gly Ser Glu Arg Phe Arg Asp Leu Val Pro Asn
65                  70                  75                  80

tac aac ccc gac ata atc ttc aag gat gag gag aac agc ggc gca gac    288
Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Ser Gly Ala Asp
                85                  90                  95
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cgc ctg atg aca gag cgt tgc aaa gag cgg gtg aac gct cta gcc atc    336
Arg Leu Met Thr Glu Arg Cys Lys Glu Arg Val Asn Ala Leu Ala Ile
            100                 105             110

gcg gtg atg aac atg tgg ccc gga gta cgc cta cgt gtg act gaa ggc    384
Ala Val Met Asn Met Trp Pro Gly Val Arg Leu Arg Val Thr Glu Gly
            115                 120             125

tgg gac gag gac ggc cac cac gca cag gat tca ctc cac tac gaa ggc    432
Trp Asp Glu Asp Gly His His Ala Gln Asp Ser Leu His Tyr Glu Gly
            130                 135             140

cgt gcc ttg gac atc acc acg tct gac cgt gac cgt aat aag tat ggt    480
Arg Ala Leu Asp Ile Thr Thr Ser Asp Arg Asp Arg Asn Lys Tyr Gly
145                 150                 155             160

ttg ttg gcg cgc cta gct gtg gaa gcc gga ttc gac tgg gtc tac tac    528
Leu Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr
                165                 170             175

gag tcc cgc aac cac atc cac gta tcg gtc aaa gct gat aac tca ctg    576
Glu Ser Arg Asn His Ile His Val Ser Val Lys Ala Asp Asn Ser Leu
                180                 185             190

gcg gtc cga gcc gga ggc tgc ttt ccg gga aat gcc acg gtg cgc ttg    624
Ala Val Arg Ala Gly Gly Cys Phe Pro Gly Asn Ala Thr Val Arg Leu
            195                 200                 205

cgg agc ggc gaa cgg aag ggg ctg agg gaa cta cat cgt ggt gac tgg    672
Arg Ser Gly Glu Arg Lys Gly Leu Arg Glu Leu His Arg Gly Asp Trp
    210                 215                 220

gta ctg gcc gct gat gca gcg ggc cga gtg gta ccc acg cca gtg ctg    720
Val Leu Ala Ala Asp Ala Ala Gly Arg Val Val Pro Thr Pro Val Leu
225                 230                 235             240

ctc ttc ctg gac cgg gat ctg cag cgc cgc gcc tcg ttc gtg gct gtg    768
Leu Phe Leu Asp Arg Asp Leu Gln Arg Arg Ala Ser Phe Val Ala Val
                245                 250             255

gag acc gag cgg cct ccg cgc aaa ctg ttg ctc aca ccc tgg cat ctg    816
Glu Thr Glu Arg Pro Pro Arg Lys Leu Leu Leu Thr Pro Trp His Leu
                260                 265             270

gtg ttc gct gct cgc ggg cca gcg cct gct cca ggt gac ttt gca ccg    864
Val Phe Ala Ala Arg Gly Pro Ala Pro Ala Pro Gly Asp Phe Ala Pro
            275                 280                 285

gtg ttc gcg cgc cgc tta cgt gct ggc gac tcg gtg ctg gct ccc ggc    912
Val Phe Ala Arg Arg Leu Arg Ala Gly Asp Ser Val Leu Ala Pro Gly
            290                 295                 300

ggg gac gcg ctc cag ccg gcg cgc gta gcc cgc gtg gcg cgc gag gaa    960
Gly Asp Ala Leu Gln Pro Ala Arg Val Ala Arg Val Ala Arg Glu Glu
305                 310                 315             320
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gcc gtg ggc gtg ttc gca ccg ctc act gcg cac ggg acg ctg ctg gtc     1008
Ala Val Gly Val Phe Ala Pro Leu Thr Ala His Gly Thr Leu Leu Val
                325                 330                 335

aac gac gtc ctc gcc tcc tgc tac gcg gtt cta gag agt cac cag tgg     1056
Asn Asp Val Leu Ala Ser Cys Tyr Ala Val Leu Glu Ser His Gln Trp
                340                 345                 350

gcc cac cgc gcc ttc gcc cct ttg cgg ctg ctg cac gcg ctc ggg gct     1104
Ala His Arg Ala Phe Ala Pro Leu Arg Leu Leu His Ala Leu Gly Ala
                355                 360                 365

ctg ctc cct ggg ggt gca gtc cag ccg act ggc atg cat tgg tac tct     1152
Leu Leu Pro Gly Gly Ala Val Gln Pro Thr Gly Met His Trp Tyr Ser
        370                 375                 380

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385                 390                 395


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  1               5                  10                  15

ctg ctg ctg ctt ctg gtg ccg gcg gcg cgg ggc tgc ggg ccg ggc cgg     96
Leu Leu Leu Leu Leu Val Pro Ala Ala Arg Gly Cys Gly Pro Gly Arg
            20                  25                  30

gtg gtg ggc agc cgc cgg agg ccg cct cgc aag ctc gtg cct ctt gcc     144
Val Val Gly Ser Arg Arg Arg Pro Pro Arg Lys Leu Val Pro Leu Ala
            35                  40                  45

tac aag cag ttc agc ccc aac gtg ccg gag aag acc ctg ggc gcc agc     192
Tyr Lys Gln Phe Ser Pro Asn Val Pro Glu Lys Thr Leu Gly Ala Ser
        50                  55                  60

ggg cgc tac gaa ggc aag atc gcg cgc agc tct gag cgc ttc aaa gag     240
Gly Arg Tyr Glu Gly Lys Ile Ala Arg Ser Ser Glu Arg Phe Lys Glu
65                  70                  75                  80

ctc acc ccc aac tac aat ccc gac atc atc ttc aag gac gag gag aac     288
Leu Thr Pro Asn Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn
                85                  90                  95

acg ggt gcc gac cgc ctc atg acc cag cgc tgc aag gac cgt ctg aac     336
Thr Gly Ala Asp Arg Leu Met Thr Gln Arg Cys Lys Asp Arg Leu Asn
                100                 105                 110
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tca ctg gcc atc tct gtc atg aac cag tgg cct ggt gtg aaa ctg cgg   384
Ser Leu Ala Ile Ser Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg
        115             120             125

gtg acc gaa ggc cgg gat gaa gat ggc cat cac tca gag gag tct tta   432
Val Thr Glu Gly Arg Asp Glu Asp Gly His His Ser Glu Glu Ser Leu
        130             135             140

cac tat gag ggc cgc gcg gtg gat atc acc acc tca gac cgt gac cga   480
His Tyr Glu Gly Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg
145             150             155             160

aat aag tat gga ctg ctg gcg cgc tta gca gtg gag gcc ggc ttc gac   528
Asn Lys Tyr Gly Leu Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp
                165             170             175

tgg gtg tat tac gag tcc aag gcc cac gtg cat tgc tct gtc aag tct   576
Trp Val Tyr Tyr Glu Ser Lys Ala His Val His Cys Ser Val Lys Ser
                180             185             190

gag cat tcg gcc gct gcc aag aca ggt ggc tgc ttt cct gcc gga gcc   624
Glu His Ser Ala Ala Ala Lys Thr Gly Gly Cys Phe Pro Ala Gly Ala
        195             200             205

cag gtg cgc cta gag aac ggg gag cgt gtg gcc ctg tca gct gta aag   672
Gln Val Arg Leu Glu Asn Gly Glu Arg Val Ala Leu Ser Ala Val Lys
        210             215             220

cca gga gac cgg gtg ctg gcc atg ggg gag gat ggg acc ccc acc ttc   720
Pro Gly Asp Arg Val Leu Ala Met Gly Glu Asp Gly Thr Pro Thr Phe
225             230             235             240

agt gat gtg ctt att ttc ctg gac cgc gag cca aac cgg ctg aga gct   768
Ser Asp Val Leu Ile Phe Leu Asp Arg Glu Pro Asn Arg Leu Arg Ala
                245             250             255

ttc cag gtc atc gag act cag gat cct ccg cgt cgg ctg gcg ctc acg   816
Phe Gln Val Ile Glu Thr Gln Asp Pro Pro Arg Arg Leu Ala Leu Thr
                260             265             270

cct gcc cac ctg ctc ttc att gcg gac aat cat aca gaa cca gca gcc   864
Pro Ala His Leu Leu Phe Ile Ala Asp Asn His Thr Glu Pro Ala Ala
        275             280             285

cac ttc cgg gcc aca ttt gcc agc cat gtg caa cca ggc caa tat gtg   912
His Phe Arg Ala Thr Phe Ala Ser His Val Gln Pro Gly Gln Tyr Val
        290             295             300

ctg gta tca ggg gta cca ggc ctc cag cct gct cgg gtg gca gct gtc   960
Leu Val Ser Gly Val Pro Gly Leu Gln Pro Ala Arg Val Ala Ala Val
305             310             315             320

tcc acc cac gtg gcc ctt ggg tcc tat gct cct ctc aca agg cat ggg  1008
Ser Thr His Val Ala Leu Gly Ser Tyr Ala Pro Leu Thr Arg His Gly
                325             330             335
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aca ctt gtg gtg gag gat gtg gtg gcc tcc tgc ttt gca gct gtg gct   1056
Thr Leu Val Val Glu Asp Val Val Ala Ser Cys Phe Ala Ala Val Ala
            340                 345                 350

gac cac cat ctg gct cag ttg gcc ttc tgg ccc ctg cga ctg ttt ccc   1104
Asp His His Leu Ala Gln Leu Ala Phe Trp Pro Leu Arg Leu Phe Pro
            355                 360                 365

agt ttg gca tgg ggc agc tgg acc cca agt gag ggt gtt cac tcc tac   1152
Ser Leu Ala Trp Gly Ser Trp Thr Pro Ser Glu Gly Val His Ser Tyr
        370                 375                 380

cct cag atg ctc tac cgc ctg ggg cgt ctc ttg cta gaa gag agc acc   1200
Pro Gln Met Leu Tyr Arg Leu Gly Arg Leu Leu Leu Glu Glu Ser Thr
385                 390                 395                 400

ttc cat cca ctg ggc atg tct ggg gca gga agc tgaagggact ctaaccactg 1253
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 1               5                  10                  15

ctg ctg gtg tgc ccc ggg ctg gcc tgt ggg ccc ggc agg ggg ttt gga   96
Leu Leu Val Cys Pro Gly Leu Ala Cys Gly Pro Gly Arg Gly Phe Gly
            20                  25                  30

aag agg cgg cac ccc aaa aag ctg acc cct tta gcc tac aag cag ttt   144
Lys Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys Gln Phe
            35                  40                  45

att ccc aac gta gcc gag aag acc cta ggg gcc agc ggc aga tat gaa   192
Ile Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg Tyr Glu
        50                  55                  60

ggg aag atc aca aga aac tcc gaa cga ttt aag gaa ctc acc ccc aat   240
Gly Lys Ile Thr Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr Pro Asn
65                  70                  75                  80

tac aac ccc gac atc ata ttt aag gat gag gaa aac acg gga gca gac   288
Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly Ala Asp
                85                  90                  95
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cgg ctg atg act cag agg tgc aaa gac aag tta aat gcc ttg gcc atc    336
Arg Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ala Leu Ala Ile
            100             105                 110

tct gtg atg aac cag tgg cct gga gtg agg ctg cga gtg acc gag ggc    384
Ser Val Met Asn Gln Trp Pro Gly Val Arg Leu Arg Val Thr Glu Gly
            115             120                 125

tgg gat gag gac ggc cat cat tca gag gag tct cta cac tat gag ggt    432
Trp Asp Glu Asp Gly His His Ser Glu Glu Ser Leu His Tyr Glu Gly
        130             135                 140

cga gca gtg gac atc acc acg tcc gac cgg gac cgc agc aag tac ggc    480
Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg Ser Lys Tyr Gly
145                 150                 155                 160

atg ctg gct cgc ctg gct gtg gaa gca ggt ttc gac tgg gtc tac tat    528
Met Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr
                165                 170                 175

gaa tcc aaa gct cac atc cac tgt tct gtg aaa gca gag aac tcc gtg    576
Glu Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn Ser Val
            180                 185                 190

gcg gcc aaa tcc ggc ggc tgt ttc ccg gga tcc gcc acc gtg cac ctg    624
Ala Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Thr Val His Leu
            195                 200                 205

gag cag ggc ggc acc aag ctg gtg aag gac tta cgt ccc gga gac cgc    672
Glu Gln Gly Gly Thr Lys Leu Val Lys Asp Leu Arg Pro Gly Asp Arg
        210                 215                 220

gtg ctg gcg gct gac gac cag ggc cgg ctg ctg tac agc gac ttc ctc    720
Val Leu Ala Ala Asp Asp Gln Gly Arg Leu Leu Tyr Ser Asp Phe Leu
225                 230                 235                 240

acc ttc ctg gac cgc gac gaa ggc gcc aag aag gtc ttc tac gtg atc    768
Thr Phe Leu Asp Arg Asp Glu Gly Ala Lys Lys Val Phe Tyr Val Ile
                245                 250                 255

gag acg ctg gag ccg cgc gag cgc ctg ctg ctc acc gcc gcg cac ctg    816
Glu Thr Leu Glu Pro Arg Glu Arg Leu Leu Leu Thr Ala Ala His Leu
            260                 265                 270

ctc ttc gtg gcg ccg cac aac gac tcg ggg ccc acg ccc ggg cca agc    864
Leu Phe Val Ala Pro His Asn Asp Ser Gly Pro Thr Pro Gly Pro Ser
            275                 280                 285

gcg ctc ttt gcc agc cgc gtg cgc ccc ggg cag cgc gtg tac gtg gtg    912
Ala Leu Phe Ala Ser Arg Val Arg Pro Gly Gln Arg Val Tyr Val Val
            290                 295                 300

gct gaa cgc ggc ggg gac cgc cgg ctg ctg ccc gcc gcg gtg cac agc    960
Ala Glu Arg Gly Gly Asp Arg Arg Leu Leu Pro Ala Ala Val His Ser
305                 310                 315                 320
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gtg acg ctg cga gag gag gag gcg ggc gcg tac gcg ccg ctc acg gcg     1008
Val Thr Leu Arg Glu Glu Glu Ala Gly Ala Tyr Ala Pro Leu Thr Ala
                325                 330                 335

cac ggc acc att ctc atc aac cgg gtg ctc gcc tcg tgc tac gct gtc     1056
His Gly Thr Ile Leu Ile Asn Arg Val Leu Ala Ser Cys Tyr Ala Val
                340                 345                 350

atc gag gag cac agc tgg gca cac cgg gcc ttc gcg cct ttc cgc ctg     1104
Ile Glu Glu His Ser Trp Ala His Arg Ala Phe Ala Pro Phe Arg Leu
                355                 360                 365

gcg cac gcg ctg ctg gcc gcg ctg gca ccc gcc cgc acg gac ggc ggg     1152
Ala His Ala Leu Leu Ala Ala Leu Ala Pro Ala Arg Thr Asp Gly Gly
        370                 375                 380

ggc ggg ggc agc atc cct gca gcg caa tct gca acg gaa gcg agg ggc     1200
Gly Gly Gly Ser Ile Pro Ala Ala Gln Ser Ala Thr Glu Ala Arg Gly
385                 390                 395                 400

gcg gag ccg act gcg ggc atc cac tgg tac tcg cag ctg ctc tac cac     1248
Ala Glu Pro Thr Ala Gly Ile His Trp Tyr Ser Gln Leu Leu Tyr His
                405                 410                 415

att ggc acc tgg ctg ttg gac agc gag acc atg cat ccc ttg gga atg     1296
Ile Gly Thr Trp Leu Leu Asp Ser Glu Thr Met His Pro Leu Gly Met
                420                 425                 430

gcg gtc aag tcc agc tg                                              1313
Ala Val Lys Ser Ser
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<213> Brachydanio rerio

<220>
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Met Arg Leu Leu Thr Arg Val Leu Leu Val Ser Leu Leu Thr Leu Ser
  1               5                  10                  15

ttg gtg gtg tcc gga ctg gcc tgc ggt cct ggc aga ggc tac ggc aga      96
Leu Val Val Ser Gly Leu Ala Cys Gly Pro Gly Arg Gly Tyr Gly Arg
                20                  25                  30

aga aga cat ccg aag aag ctg aca cct ctc gcc tac aag cag ttc ata     144
Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys Gln Phe Ile
            35                  40                  45

cct aat gtc gcg gag aag acc tta ggg gcc agc ggc aga tac gag ggc     192
Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg Tyr Glu Gly
        50                  55                  60
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aag ata acg cgc aat tcg gag aga ttt aaa gaa ctt act cca aat tac    240
Lys Ile Thr Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr Pro Asn Tyr
 65                  70                  75                  80

aat ccc gac att atc ttt aag gat gag gag aac acg gga gcg gac agg    288
Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly Ala Asp Arg
                     85                  90                  95

ctc atg aca cag aga tgc aaa gac aag ctg aac tcg ctg gcc atc tct    336
Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ser Leu Ala Ile Ser
                100                 105                 110

gta atg aac cac tgg cca ggg gtt aag ctg cgt gtg aca gag ggc tgg    384
Val Met Asn His Trp Pro Gly Val Lys Leu Arg Val Thr Glu Gly Trp
            115                 120                 125

gat gag gac ggt cac cat ttt gaa gaa tca ctc cac tac gag gga aga    432
Asp Glu Asp Gly His His Phe Glu Glu Ser Leu His Tyr Glu Gly Arg
        130                 135                 140

gct gtt gat att acc acc tct gac cga gac aag agc aaa tac ggg aca    480
Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Lys Ser Lys Tyr Gly Thr
145                 150                 155                 160

ctg tct cgc cta gct gtg gag gct gga ttt gac tgg gtc tat tac gag    528
Leu Ser Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr Glu
                165                 170                 175

tcc aaa gcc cac att cat tgc tct gtc aaa gca gaa aat tcg gtt gct    576
Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn Ser Val Ala
                180                 185                 190

gcg aaa tct ggg ggc tgt ttc cca ggt tcg gct ctg gtc tcg ctc cag    624
Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Leu Val Ser Leu Gln
            195                 200                 205

gac gga gga cag aag gcc gtg aag gac ctg aac ccc gga gac aag gtg    672
Asp Gly Gly Gln Lys Ala Val Lys Asp Leu Asn Pro Gly Asp Lys Val
        210                 215                 220

ctg gcg gca gac agc gcg gga aac ctg gtg ttc agc gac ttc atc atg    720
Leu Ala Ala Asp Ser Ala Gly Asn Leu Val Phe Ser Asp Phe Ile Met
225                 230                 235                 240

ttc aca gac cga gac tcc acg acg cga cgt gtg ttt tac gtc ata gaa    768
Phe Thr Asp Arg Asp Ser Thr Thr Arg Arg Val Phe Tyr Val Ile Glu
                245                 250                 255

acg caa gaa ccc gtt gaa aag atc acc ctc acc gcc gct cac ctc ctt    816
Thr Gln Glu Pro Val Glu Lys Ile Thr Leu Thr Ala Ala His Leu Leu
                260                 265                 270

ttt gtc ctc gac aac tca acg gaa gat ctc cac acc atg acc gcc gcg    864
Phe Val Leu Asp Asn Ser Thr Glu Asp Leu His Thr Met Thr Ala Ala
            275                 280                 285
```

```
tat gcc agc agt gtc aga gcc gga caa aag gtg atg gtt gtt gat gat    912
Tyr Ala Ser Ser Val Arg Ala Gly Gln Lys Val Met Val Val Asp Asp
    290                 295             300

agc ggt cag ctt aaa tct gtc atc gtg cag cgg ata tac acg gag gag    960
Ser Gly Gln Leu Lys Ser Val Ile Val Gln Arg Ile Tyr Thr Glu Glu
305                 310             315                 320

cag cgg ggc tcg ttc gca cca gtg act gca cat ggg acc att gtg gtc   1008
Gln Arg Gly Ser Phe Ala Pro Val Thr Ala His Gly Thr Ile Val Val
                325             330             335

gac aga ata ctg gcg tcc tgt tac gcc gta ata gag gac cag ggg ctt   1056
Asp Arg Ile Leu Ala Ser Cys Tyr Ala Val Ile Glu Asp Gln Gly Leu
            340             345             350

gcg cat ttg gcc ttc gcg ccc gcc agg ctc tat tat tac gtg tca tca   1104
Ala His Leu Ala Phe Ala Pro Ala Arg Leu Tyr Tyr Tyr Val Ser Ser
            355             360             365

ttc ctg tcc ccc aaa act cca gca gtc ggt cca atg cga ctt tac aac   1152
Phe Leu Ser Pro Lys Thr Pro Ala Val Gly Pro Met Arg Leu Tyr Asn
    370                 375             380

agg agg ggg tcc act ggt act cca ggc tcc tgt cat caa atg gga acg   1200
Arg Arg Gly Ser Thr Gly Thr Pro Gly Ser Cys His Gln Met Gly Thr
385                 390             395                 400

tgg ctt ttg gac agc aac atg ctt cat cct ttg ggg atg tca gta aac   1248
Trp Leu Leu Asp Ser Asn Met Leu His Pro Leu Gly Met Ser Val Asn
                405             410                 415

tca agc tg                                                         1256
Ser Ser
```

<210> 6
<211> 1425
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(1425)

<220>
<223> "nnn" encoding "Xaa" at position 1387-1389 may be a, t, c,
      g, other or unknown

<400> 6
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atg ctg ctg ctg gcg aga tgt ctg ctg cta gtc ctc gtc tcc tcg ctg     48
Met Leu Leu Leu Ala Arg Cys Leu Leu Leu Val Leu Val Ser Ser Leu
    1               5                   10                  15

ctg gta tgc tcg gga ctg gcg tgc gga ccg ggc agg ggg ttc ggg aag     96
Leu Val Cys Ser Gly Leu Ala Cys Gly Pro Gly Arg Gly Phe Gly Lys
                20                  25                  30
```

```
agg agg cac ccc aaa aag ctg acc cct tta gcc tac aag cag ttt atc     144
Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys Gln Phe Ile
         35                40                45

ccc aat gtg gcc gag aag acc cta ggc gcc agc gga agg tat gaa ggg     192
Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg Tyr Glu Gly
         50                55                60

aag atc tcc aga aac tcc gag cga ttt aag gaa ctc acc ccc aat tac     240
Lys Ile Ser Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr Pro Asn Tyr
65                70                75                80

aac ccc gac atc ata ttt aag gat gaa gaa aac acc gga gcg gac agg     288
Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly Ala Asp Arg
                 85                90                95

ctg atg act cag agg tgt aag gac aag ttg aac gct ttg gcc atc tcg     336
Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ala Leu Ala Ile Ser
             100               105               110

gtg atg aac cag tgg cca gga gtg aaa ctg cgg gtg acc gag ggc tgg     384
Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg Val Thr Glu Gly Trp
             115               120               125

gac gaa gat ggc cac cac tca gag gag tct ctg cac tac gag ggc cgc     432
Asp Glu Asp Gly His His Ser Glu Glu Ser Leu His Tyr Glu Gly Arg
         130               135               140

gca gtg gac atc acc acg tct gac cgc gac cgc agc aag tac ggc atg     480
Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg Ser Lys Tyr Gly Met
145               150               155               160

ctg gcc cgc ctg gcg gtg gag gcc ggc ttc gac tgg gtg tac tac gag     528
Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr Glu
             165               170               175

tcc aag gca cat atc cac tgc tcg gtg aaa gca gag aac tcg gtg gcg     576
Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn Ser Val Ala
             180               185               190

gcc aaa tcg gga ggc tgc ttc ccg ggc tcg gcc acg gtg cac ctg gag     624
Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Thr Val His Leu Glu
             195               200               205

cag ggc ggc acc aag ctg gtg aag gac ctg agc ccc ggg gac cgc gtg     672
Gln Gly Gly Thr Lys Leu Val Lys Asp Leu Ser Pro Gly Asp Arg Val
         210               215               220

ctg gcg gcg gac gac cag ggc cgg ctg ctc tac agc gac ttc ctc act     720
Leu Ala Ala Asp Asp Gln Gly Arg Leu Leu Tyr Ser Asp Phe Leu Thr
225               230               235               240

ttc ctg gac cgc gac gac ggc gcc aag aag gtc ttc tac gtg atc gag     768
Phe Leu Asp Arg Asp Asp Gly Ala Lys Lys Val Phe Tyr Val Ile Glu
                 245               250               255
```

```
acg cgg gag ccg cgc gag cgc ctg ctg ctc acc gcc gcg cac ctg ctc    816
Thr Arg Glu Pro Arg Glu Arg Leu Leu Leu Thr Ala Ala His Leu Leu
        260             265             270

ttt gtg gcg ccg cac aac gac tcg gcc acc ggg gag ccc gag gcg tcc    864
Phe Val Ala Pro His Asn Asp Ser Ala Thr Gly Glu Pro Glu Ala Ser
        275             280             285

tcg ggc tcg ggg ccg cct tcc ggg ggc gca ctg ggg cct cgg gcg ctg    912
Ser Gly Ser Gly Pro Pro Ser Gly Gly Ala Leu Gly Pro Arg Ala Leu
        290             295             300

ttc gcc agc cgc gtg cgc ccg ggc cag cgc gtg tac gtg gtg gcc gag    960
Phe Ala Ser Arg Val Arg Pro Gly Gln Arg Val Tyr Val Val Ala Glu
305             310             315             320

cgt gac ggg gac cgc cgg ctc ctg ccc gcc gct gtg cac agc gtg acc   1008
Arg Asp Gly Asp Arg Arg Leu Leu Pro Ala Ala Val His Ser Val Thr
            325             330             335

cta agc gag gag gcc gcg ggc gcc tac gcg ccg ctc acg gcc cag ggc   1056
Leu Ser Glu Glu Ala Ala Gly Ala Tyr Ala Pro Leu Thr Ala Gln Gly
            340             345             350

acc att ctc atc aac cgg gtg ctg gcc tcg tgc tac gcg gtc atc gag   1104
Thr Ile Leu Ile Asn Arg Val Leu Ala Ser Cys Tyr Ala Val Ile Glu
        355             360             365

gag cac agc tgg gcg cac cgg gcc ttc gcg ccc ttc cgc ctg gcg cac   1152
Glu His Ser Trp Ala His Arg Ala Phe Ala Pro Phe Arg Leu Ala His
        370             375             380

gcg ctc ctg gct gca ctg gcg ccc gcg cgc acg gac cgc ggc ggg gac   1200
Ala Leu Leu Ala Ala Leu Ala Pro Ala Arg Thr Asp Arg Gly Gly Asp
385             390             395             400

agc ggc ggc ggg gac cgc ggg ggc ggc ggc ggc aga gta gcc cta acc   1248
Ser Gly Gly Gly Asp Arg Gly Gly Gly Gly Gly Arg Val Ala Leu Thr
            405             410             415

gct cca ggt gct gcc gac gct ccg ggt gcg ggg gcc acc gcg ggc atc   1296
Ala Pro Gly Ala Ala Asp Ala Pro Gly Ala Gly Ala Thr Ala Gly Ile
            420             425             430

cac tgg tac tcg cag ctg ctc tac caa ata ggc acc tgg ctc ctg gac   1344
His Trp Tyr Ser Gln Leu Leu Tyr Gln Ile Gly Thr Trp Leu Leu Asp
            435             440             445

agc gag gcc ctg cac ccg ctg ggc atg gcg gtc aag tcc agc nnn agc   1392
Ser Glu Ala Leu His Pro Leu Gly Met Ala Val Lys Ser Ser Xaa Ser
        450             455             460

cgg ggg gcc ggg gga ggg gcg cgg gag ggg gcc                        1425
Arg Gly Ala Gly Gly Gly Ala Arg Glu Gly Ala
465             470             475
```

<210> 7
<211> 1622
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (51)..(1283)

<400> 7
catcagccca ccaggagacc tcgcccgccg ctcccccggg ctccccggcc atg tct   56
                                                        Met Ser
                                                         1

ccc gcc cgg ctc cgg ccc cga ctg cac ttc tgc ctg gtc ctg ttg ctg   104
Pro Ala Arg Leu Arg Pro Arg Leu His Phe Cys Leu Val Leu Leu Leu
            5   10   15

ctg ctg gtg gtg ccc gcg gca tgg ggc tgc ggg ccg ggt cgg gtg gtg   152
Leu Leu Val Val Pro Ala Ala Trp Gly Cys Gly Pro Gly Arg Val Val
        20   25   30

ggc agc cgc cgg cga ccg cca cgc aaa ctc gtg ccg ctc gcc tac aag   200
Gly Ser Arg Arg Arg Pro Pro Arg Lys Leu Val Pro Leu Ala Tyr Lys
 35   40   45   50

cag ttc agc ccc aat gtg ccc gag aag acc ctg ggc gcc agc gga cgc   248
Gln Phe Ser Pro Asn Val Pro Glu Lys Thr Leu Gly Ala Ser Gly Arg
                55   60   65

tat gaa ggc aag atc gct cgc agc tcc gag cgc ttc aag gag ctc acc   296
Tyr Glu Gly Lys Ile Ala Arg Ser Ser Glu Arg Phe Lys Glu Leu Thr
                70   75   80

ccc aat tac aat cca gac atc atc ttc aag gac gag gag aac aca ggc   344
Pro Asn Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly
                85   90   95

gcc gac cgc ctc atg acc cag cgc tgc aag gac cgc ctg aac tcg ctg   392
Ala Asp Arg Leu Met Thr Gln Arg Cys Lys Asp Arg Leu Asn Ser Leu
    100   105   110

gct atc tcg gtg atg aac cag tgg ccc ggt gtg aag ctg cgg gtg acc   440
Ala Ile Ser Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg Val Thr
115   120   125   130

gag ggc tgg gac gag gac ggc cac cac tca gag gag tcc ctg cat tat   488
Glu Gly Trp Asp Glu Asp Gly His His Ser Glu Glu Ser Leu His Tyr
                135   140   145

gag ggc cgc gcg gtg gac atc acc aca tca gac cgc gac cgc aat aag   536
Glu Gly Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg Asn Lys
                150   155   160

tat gga ctg ctg gcg cgc ttg gca gtg gag gcc ggc ttt gac tgg gtg   584
Tyr Gly Leu Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val
                165   170   175

```
tat tac gag tca aag gcc cac gtg cat tgc tcc gtc aag tcc gag cac    632
Tyr Tyr Glu Ser Lys Ala His Val His Cys Ser Val Lys Ser Glu His
    180             185                 190

tcg gcc gca gcc aag acg ggc ggc tgc ttc cct gcc gga gcc cag gta    680
Ser Ala Ala Ala Lys Thr Gly Gly Cys Phe Pro Ala Gly Ala Gln Val
195             200                 205                     210

cgc ctg gag agt ggg gcg cgt gtg gcc ttg tca gcc gtg agg ccg gga    728
Arg Leu Glu Ser Gly Ala Arg Val Ala Leu Ser Ala Val Arg Pro Gly
                215                 220                 225

gac cgt gtg ctg gcc atg ggg gag gat ggg agc ccc acc ttc agc gat    776
Asp Arg Val Leu Ala Met Gly Glu Asp Gly Ser Pro Thr Phe Ser Asp
                230                 235                 240

gtg ctc att ttc ctg gac cgc gag ccc cac agg ctg aga gcc ttc cag    824
Val Leu Ile Phe Leu Asp Arg Glu Pro His Arg Leu Arg Ala Phe Gln
            245                 250                 255

gtc atc gag act cag gac ccc cca cgc cgc ctg gca ctc aca ccc gct    872
Val Ile Glu Thr Gln Asp Pro Pro Arg Arg Leu Ala Leu Thr Pro Ala
    260                 265                 270

cac ctg ctc ttt acg gct gac aat cac acg gag ccg gca gcc cgc ttc    920
His Leu Leu Phe Thr Ala Asp Asn His Thr Glu Pro Ala Ala Arg Phe
275                 280                 285                 290

cgg gcc aca ttt gcc agc cac gtg cag cct ggc cag tac gtg ctg gtg    968
Arg Ala Thr Phe Ala Ser His Val Gln Pro Gly Gln Tyr Val Leu Val
                295                 300                 305

gct ggg gtg cca ggc ctg cag cct gcc cgc gtg gca gct gtc tct aca    1016
Ala Gly Val Pro Gly Leu Gln Pro Ala Arg Val Ala Ala Val Ser Thr
            310                 315                 320

cac gtg gcc ctc ggg gcc tac gcc ccg ctc aca aag cat ggg aca ctg    1064
His Val Ala Leu Gly Ala Tyr Ala Pro Leu Thr Lys His Gly Thr Leu
            325                 330                 335

gtg gtg gag gat gtg gtg gca tcc tgc ttc gcg gcc gtg gct gac cac    1112
Val Val Glu Asp Val Val Ala Ser Cys Phe Ala Ala Val Ala Asp His
    340                 345                 350

cac ctg gct cag ttg gcc ttc tgg ccc ctg aga ctc ttt cac agc ttg    1160
His Leu Ala Gln Leu Ala Phe Trp Pro Leu Arg Leu Phe His Ser Leu
355                 360                 365                 370

gca tgg ggc agc tgg acc ccg ggg gag ggt gtg cat tgg tac ccc cag    1208
Ala Trp Gly Ser Trp Thr Pro Gly Glu Gly Val His Trp Tyr Pro Gln
                375                 380                 385

ctg ctc tac cgc ctg ggg cgt ctc ctg cta gaa gag ggc agc ttc cac    1256
Leu Leu Tyr Arg Leu Gly Arg Leu Leu Leu Glu Glu Gly Ser Phe His
            390                 395                 400
```

```
cca ctg ggc atg tcc ggg gca ggg agc tgaaaggact ccaccgctgc        1303
Pro Leu Gly Met Ser Gly Ala Gly Ser
        405                 410

cctcctggaa ctgctgtact gggtccagaa gcctctcagc caggagggag ctggccctgg 1363

aagggacctg agctggggga cactggctcc tgccatctcc tctgccatga agatacacca 1423

ttgagacttg actgggcaac accagcgtcc cccacccgcg tcgtggtgta gtcatagagc 1483

tgcaagctga gctggcgagg ggatggttgt tgacccctct ctcctagaga ccttgaggct 1543

ggcacggcga ctcccaactc agcctgctct cactacgagt tttcatactc tgcctccccc 1603

attgggaggg cccattccc                                             1622


<210> 8
<211> 1190
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(1188)

<400> 8
atg gct ctc ctg acc aat cta ctg ccc ttg tgc tgc ttg gca ctt ctg   48
Met Ala Leu Leu Thr Asn Leu Leu Pro Leu Cys Cys Leu Ala Leu Leu
 1               5                  10                  15

gcg ctg cca gcc cag agc tgc ggg ccg ggc cgg ggg ccg gtt ggc cgg   96
Ala Leu Pro Ala Gln Ser Cys Gly Pro Gly Arg Gly Pro Val Gly Arg
            20                  25                  30

cgc cgc tat gcg cgc aag cag ctc gtg ccg cta ctc tac aag caa ttt  144
Arg Arg Tyr Ala Arg Lys Gln Leu Val Pro Leu Leu Tyr Lys Gln Phe
            35                  40                  45

gtg ccc ggc gtg cca gag cgg acc ctg ggc gcc agt ggg cca gcg gag  192
Val Pro Gly Val Pro Glu Arg Thr Leu Gly Ala Ser Gly Pro Ala Glu
    50                  55                  60

ggg agg gtg gca agg ggc tcc gag cgc ttc cgg gac ctc gtg ccc aac  240
Gly Arg Val Ala Arg Gly Ser Glu Arg Phe Arg Asp Leu Val Pro Asn
65                  70                  75                  80

tac aac ccc gac atc atc ttc aag gat gag gag aac agt gga gcc gac  288
Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Ser Gly Ala Asp
                85                  90                  95

cgc ctg atg acc gag cgt tgc aag gag agg gtg aac gct ttg gcc att  336
Arg Leu Met Thr Glu Arg Cys Lys Glu Arg Val Asn Ala Leu Ala Ile
                100                 105                 110

gcc gtg atg aac atg tgg ccc gga gtg cgc cta cga gtg act gag ggc  384
Ala Val Met Asn Met Trp Pro Gly Val Arg Leu Arg Val Thr Glu Gly
            115                 120                 125
```

```
tgg gac gag gac ggc cac cac gct cag gat tca ctc cac tac gaa ggc    432
Trp Asp Glu Asp Gly His His Ala Gln Asp Ser Leu His Tyr Glu Gly
    130             135             140

cgt gct ttg gac atc act acg tct gac cgc gac cgc aac aag tat ggg    480
Arg Ala Leu Asp Ile Thr Thr Ser Asp Arg Asp Arg Asn Lys Tyr Gly
145             150             155             160

ttg ctg gcg cgc ctc gca gtg gaa gcc ggc ttc gac tgg gtc tac tac    528
Leu Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr
            165             170             175

gag tcc cgc aac cac gtc cac gtg tcg gtc aaa gct gat aac tca ctg    576
Glu Ser Arg Asn His Val His Val Ser Val Lys Ala Asp Asn Ser Leu
            180             185             190

gcg gtc cgg gcg ggc ggc tgc ttt ccg gga aat gca act gtg cgc ctg    624
Ala Val Arg Ala Gly Gly Cys Phe Pro Gly Asn Ala Thr Val Arg Leu
        195             200             205

tgg agc ggc gag cgg aaa ggg ctg cgg gaa ctg cac cgc gga gac tgg    672
Trp Ser Gly Glu Arg Lys Gly Leu Arg Glu Leu His Arg Gly Asp Trp
    210             215             220

gtt ttg gcg gcc gat gcg tca ggc cgg gtg gtg ccc acg ccg gtg ctg    720
Val Leu Ala Ala Asp Ala Ser Gly Arg Val Val Pro Thr Pro Val Leu
225             230             235             240

ctc ttc ctg gac cgg gac ttg cag cgc cgg gct tca ttt gtg gct gtg    768
Leu Phe Leu Asp Arg Asp Leu Gln Arg Arg Ala Ser Phe Val Ala Val
            245             250             255

gag acc gag tgg cct cca cgc aaa ctg ttg ctc acg ccc tgg cac ctg    816
Glu Thr Glu Trp Pro Pro Arg Lys Leu Leu Leu Thr Pro Trp His Leu
            260             265             270

gtg ttt gcc gct cga ggg ccg gcg ccc gcg cca ggc gac ttt gca ccg    864
Val Phe Ala Ala Arg Gly Pro Ala Pro Ala Pro Gly Asp Phe Ala Pro
        275             280             285

gtg ttc gcg cgc cgg cta cgc gct ggg gac tcg gtg ctg gcg ccc ggc    912
Val Phe Ala Arg Arg Leu Arg Ala Gly Asp Ser Val Leu Ala Pro Gly
        290             295             300

ggg gat gcg ctt cgg cca gcg cgc gtg gcc cgt gtg gcg cgg gag gaa    960
Gly Asp Ala Leu Arg Pro Ala Arg Val Ala Arg Val Ala Arg Glu Glu
305             310             315             320

gcc gtg ggc gtg ttc gcg ccg ctc acc gcg cac ggg acg ctg ctg gtg   1008
Ala Val Gly Val Phe Ala Pro Leu Thr Ala His Gly Thr Leu Leu Val
            325             330             335

aac gat gtc ctg gcc tct tgc tac gcg gtt ctg gag agt cac cag tgg   1056
Asn Asp Val Leu Ala Ser Cys Tyr Ala Val Leu Glu Ser His Gln Trp
        340             345             350
```

```
gcg cac cgc gct ttt gcc ccc ttg aga ctg ctg cac gcg cta ggg gcg    1104
Ala His Arg Ala Phe Ala Pro Leu Arg Leu Leu His Ala Leu Gly Ala
        355                 360                 365

ctg ctc ccc ggc ggg gcc gtc cag ccg act ggc atg cat tgg tac tct    1152
Leu Leu Pro Gly Gly Ala Val Gln Pro Thr Gly Met His Trp Tyr Ser
        370                 375                 380

cgg ctc ctc tac cgc tta gcg gag gag cta ctg ggc tg                 1190
Arg Leu Leu Tyr Arg Leu Ala Glu Glu Leu Leu Gly
385                 390                 395
```

<210> 9
<211> 1251
<212> DNA
<213> Brachydanio rerio

<220>
<221> CDS
<222> (1)..(1248)

<400> 9
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atg gac gta agg ctg cat ctg aag caa ttt gct tta ctg tgt ttt atc    48
Met Asp Val Arg Leu His Leu Lys Gln Phe Ala Leu Leu Cys Phe Ile
 1               5                  10                  15

agc ttg ctt ctg acg cct tgt gga tta gcc tgt ggt cct ggt aga ggt    96
Ser Leu Leu Leu Thr Pro Cys Gly Leu Ala Cys Gly Pro Gly Arg Gly
            20                  25                  30

tat gga aaa cga aga cac cca aag aaa tta acc ccg ttg gct tac aag    144
Tyr Gly Lys Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys
        35                  40                  45

caa ttc atc ccc aac gtt gct gag aaa acg ctt gga gcc agc ggc aaa    192
Gln Phe Ile Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Lys
        50                  55                  60

tac gaa ggc aaa atc aca agg aat tca gag aga ttt aaa gag ctg att    240
Tyr Glu Gly Lys Ile Thr Arg Asn Ser Glu Arg Phe Lys Glu Leu Ile
65                  70                  75                  80

ccg aat tat aat ccc gat atc atc ttt aag gac gag gaa aac aca aac    288
Pro Asn Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Asn
                85                  90                  95

gct gac agg ctg atg acc aag cgc tgt aag gac aag tta aat tcg ttg    336
Ala Asp Arg Leu Met Thr Lys Arg Cys Lys Asp Lys Leu Asn Ser Leu
            100                 105                 110

gcc ata tcc gtc atg aac cac tgg ccc ggc gtg aaa ctg cgc gtc act    384
Ala Ile Ser Val Met Asn His Trp Pro Gly Val Lys Leu Arg Val Thr
            115                 120                 125

gaa ggc tgg gat gag gat ggt cac cat tta gaa gaa tct ttg cac tat    432
Glu Gly Trp Asp Glu Asp Gly His His Leu Glu Glu Ser Leu His Tyr
            130                 135                 140
```

```
gag gga cgg gca gtg gac atc act acc tca gac agg gat aaa agc aag    480
Glu Gly Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Lys Ser Lys
145                 150             155                 160

tat ggg atg cta tcc agg ctt gca gtg gag gca gga ttc gac tgg gtc    528
Tyr Gly Met Leu Ser Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val
                    165             170                 175

tat tat gaa tct aaa gcc cac ata cac tgc tct gtc aaa gca gaa aat    576
Tyr Tyr Glu Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn
                180             185                 190

tca gtg gct gct aaa tca gga gga tgt ttt cct ggg tct ggg acg gtg    624
Ser Val Ala Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Gly Thr Val
                195             200                 205

aca ctt ggt gat ggg acg agg aaa ccc atc aaa gat ctt aaa gtg ggc    672
Thr Leu Gly Asp Gly Thr Arg Lys Pro Ile Lys Asp Leu Lys Val Gly
        210             215             220

gac cgg gtt ttg gct gca gac gag aag gga aat gtc tta ata agc gac    720
Asp Arg Val Leu Ala Ala Asp Glu Lys Gly Asn Val Leu Ile Ser Asp
225                 230             235                 240

ttt att atg ttt ata gac cac gat ccg aca acg aga agg caa ttc atc    768
Phe Ile Met Phe Ile Asp His Asp Pro Thr Thr Arg Arg Gln Phe Ile
                245             250                 255

gtc atc gag acg tca gaa cct ttc acc aag ctc acc ctc act gcc gcg    816
Val Ile Glu Thr Ser Glu Pro Phe Thr Lys Leu Thr Leu Thr Ala Ala
                260             265                 270

cac cta gtt ttc gtt gga aac tct tca gca gct tcg ggt ata aca gca    864
His Leu Val Phe Val Gly Asn Ser Ser Ala Ala Ser Gly Ile Thr Ala
        275             280             285

aca ttt gcc agc aac gtg aag cct gga gat aca gtt tta gtg tgg gaa    912
Thr Phe Ala Ser Asn Val Lys Pro Gly Asp Thr Val Leu Val Trp Glu
        290             295             300

gac aca tgc gag agc ctc aag agc gtt aca gtg aaa agg att tac act    960
Asp Thr Cys Glu Ser Leu Lys Ser Val Thr Val Lys Arg Ile Tyr Thr
305                 310             315                 320

gag gag cac gag ggc tct ttt gcg cca gtc acc gcg cac gga acc ata   1008
Glu Glu His Glu Gly Ser Phe Ala Pro Val Thr Ala His Gly Thr Ile
                325             330                 335

ata gtg gat cag gtg ttg gca tcg tgc tac gcg gtc att gag aac cac   1056
Ile Val Asp Gln Val Leu Ala Ser Cys Tyr Ala Val Ile Glu Asn His
                340             345                 350

aaa tgg gca cat tgg gct ttt gcg ccg gtc agg ttg tgt cac aag ctg   1104
Lys Trp Ala His Trp Ala Phe Ala Pro Val Arg Leu Cys His Lys Leu
        355             360             365
```

```
atg acg tgg ctt ttt ccg gct cgt gaa tca aac gtc aat ttt cag gag    1152
Met Thr Trp Leu Phe Pro Ala Arg Glu Ser Asn Val Asn Phe Gln Glu
    370             375             380

gat ggt atc cac tgg tac tca aat atg ctg ttt cac atc ggc tct tgg    1200
Asp Gly Ile His Trp Tyr Ser Asn Met Leu Phe His Ile Gly Ser Trp
385             390             395             400

ctg ctg gac aga gac tct ttc cat cca ctc ggg att tta cac tta agt    1248
Leu Leu Asp Arg Asp Ser Phe His Pro Leu Gly Ile Leu His Leu Ser
            405             410             415

tga                                                                 1251
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<210> 10
<211> 425
<212> PRT
<213> Gallus sp.

<400> 10

```
Met Val Glu Met Leu Leu Leu Thr Arg Ile Leu Leu Val Gly Phe Ile
1               5                   10                  15

Cys Ala Leu Leu Val Ser Ser Gly Leu Thr Cys Gly Pro Gly Arg Gly
            20                  25                  30

Ile Gly Lys Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys
        35                  40                  45

Gln Phe Ile Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg
    50                  55                  60

Tyr Glu Gly Lys Ile Thr Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr
65                  70                  75                  80

Pro Asn Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly
                85                  90                  95

Ala Asp Arg Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ala Leu
            100                 105                 110

Ala Ile Ser Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg Val Thr
            115                 120                 125

Glu Gly Trp Asp Glu Asp Gly His His Ser Glu Glu Ser Leu His Tyr
            130                 135                 140

Glu Gly Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg Ser Lys
145                 150                 155                 160

Tyr Gly Met Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val
                165                 170                 175

Tyr Tyr Glu Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn
                180                 185                 190
```

```
Ser Val Ala Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Thr Val
        195             200             205

His Leu Glu His Gly Gly Thr Lys Leu Val Lys Asp Leu Ser Pro Gly
        210             215             220

Asp Arg Val Leu Ala Ala Asp Ala Asp Gly Arg Leu Leu Tyr Ser Asp
225             230             235             240

Phe Leu Thr Phe Leu Asp Arg Met Asp Ser Ser Arg Lys Leu Phe Tyr
            245             250             255

Val Ile Glu Thr Arg Gln Pro Arg Ala Arg Leu Leu Leu Thr Ala Ala
        260             265             270

His Leu Leu Phe Val Ala Pro Gln His Asn Gln Ser Glu Ala Thr Gly
        275             280             285

Ser Thr Ser Gly Gln Ala Leu Phe Ala Ser Asn Val Lys Pro Gly Gln
    290             295             300

Arg Val Tyr Val Leu Gly Glu Gly Gly Gln Gln Leu Leu Pro Ala Ser
305             310             315             320

Val His Ser Val Ser Leu Arg Glu Glu Ala Ser Gly Ala Tyr Ala Pro
            325             330             335

Leu Thr Ala Gln Gly Thr Ile Leu Ile Asn Arg Val Leu Ala Ser Cys
            340             345             350

Tyr Ala Val Ile Glu Glu His Ser Trp Ala His Trp Ala Phe Ala Pro
            355             360             365

Phe Arg Leu Ala Gln Gly Leu Leu Ala Ala Leu Cys Pro Asp Gly Ala
        370             375             380

Ile Pro Thr Ala Ala Thr Thr Thr Gly Ile His Trp Tyr Ser Arg
385             390             395             400

Leu Leu Tyr Arg Ile Gly Ser Trp Val Leu Asp Gly Asp Ala Leu His
            405             410             415

Pro Leu Gly Met Val Ala Pro Ala Ser
            420             425
```

```
<210> 11
<211> 396
<212> PRT
<213> Murine sp.

<400> 11
Met Ala Leu Pro Ala Ser Leu Leu Pro Leu Cys Cys Leu Ala Leu Leu
  1           5               10              15

Ala Leu Ser Ala Gln Ser Cys Gly Pro Gly Arg Gly Pro Val Gly Arg
            20              25              30
```

Arg Arg Tyr Val Arg Lys Gln Leu Val Pro Leu Leu Tyr Lys Gln Phe
        35   40   45

Val Pro Ser Met Pro Glu Arg Thr Leu Gly Ala Ser Gly Pro Ala Glu
    50   55   60

Gly Arg Val Thr Arg Gly Ser Glu Arg Phe Arg Asp Leu Val Pro Asn
65   70   75   80

Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Ser Gly Ala Asp
            85   90   95

Arg Leu Met Thr Glu Arg Cys Lys Glu Arg Val Asn Ala Leu Ala Ile
            100   105   110

Ala Val Met Asn Met Trp Pro Gly Val Arg Leu Arg Val Thr Glu Gly
        115   120   125

Trp Asp Glu Asp Gly His His Ala Gln Asp Ser Leu His Tyr Glu Gly
    130   135   140

Arg Ala Leu Asp Ile Thr Thr Ser Asp Arg Asp Arg Asn Lys Tyr Gly
145   150   155   160

Leu Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr
            165   170   175

Glu Ser Arg Asn His Ile His Val Ser Val Lys Ala Asp Asn Ser Leu
            180   185   190

Ala Val Arg Ala Gly Gly Cys Phe Pro Gly Asn Ala Thr Val Arg Leu
        195   200   205

Arg Ser Gly Glu Arg Lys Gly Leu Arg Glu Leu His Arg Gly Asp Trp
    210   215   220

Val Leu Ala Ala Asp Ala Ala Gly Arg Val Val Pro Thr Pro Val Leu
225   230   235   240

Leu Phe Leu Asp Arg Asp Leu Gln Arg Arg Ala Ser Phe Val Ala Val
            245   250   255

Glu Thr Glu Arg Pro Pro Arg Lys Leu Leu Leu Thr Pro Trp His Leu
        260   265   270

Val Phe Ala Ala Arg Gly Pro Ala Pro Ala Pro Gly Asp Phe Ala Pro
    275   280   285

Val Phe Ala Arg Arg Leu Arg Ala Gly Asp Ser Val Leu Ala Pro Gly
    290   295   300

Gly Asp Ala Leu Gln Pro Ala Arg Val Ala Arg Val Ala Arg Glu Glu
305   310   315   320

Ala Val Gly Val Phe Ala Pro Leu Thr Ala His Gly Thr Leu Leu Val
            325   330   335

```
Asn Asp Val Leu Ala Ser Cys Tyr Ala Val Leu Glu Ser His Gln Trp
        340             345             350

Ala His Arg Ala Phe Ala Pro Leu Arg Leu Leu His Ala Leu Gly Ala
        355             360             365

Leu Leu Pro Gly Gly Ala Val Gln Pro Thr Gly Met His Trp Tyr Ser
    370             375             380

Arg Leu Leu Tyr Arg Leu Ala Glu Glu Leu Met Gly
385             390             395
```

<210> 12
<211> 411
<212> PRT
<213> Murine sp.

<400> 12

```
Met Ser Pro Ala Trp Leu Arg Pro Arg Leu Arg Phe Cys Leu Phe Leu
  1             5               10              15

Leu Leu Leu Leu Leu Val Pro Ala Ala Arg Gly Cys Gly Pro Gly Arg
            20              25              30

Val Val Gly Ser Arg Arg Arg Pro Pro Arg Lys Leu Val Pro Leu Ala
        35              40              45

Tyr Lys Gln Phe Ser Pro Asn Val Pro Glu Lys Thr Leu Gly Ala Ser
    50              55              60

Gly Arg Tyr Glu Gly Lys Ile Ala Arg Ser Ser Glu Arg Phe Lys Glu
65              70              75              80

Leu Thr Pro Asn Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn
            85              90              95

Thr Gly Ala Asp Arg Leu Met Thr Gln Arg Cys Lys Asp Arg Leu Asn
        100             105             110

Ser Leu Ala Ile Ser Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg
        115             120             125

Val Thr Glu Gly Arg Asp Glu Asp Gly His His Ser Glu Glu Ser Leu
    130             135             140

His Tyr Glu Gly Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg
145             150             155             160

Asn Lys Tyr Gly Leu Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp
            165             170             175

Trp Val Tyr Tyr Glu Ser Lys Ala His Val His Cys Ser Val Lys Ser
            180             185             190

Glu His Ser Ala Ala Ala Lys Thr Gly Gly Cys Phe Pro Ala Gly Ala
        195             200             205
```

```
Gln Val Arg Leu Glu Asn Gly Glu Arg Val Ala Leu Ser Ala Val Lys
    210                 215             220

Pro Gly Asp Arg Val Leu Ala Met Gly Glu Asp Gly Thr Pro Thr Phe
225                 230             235                 240

Ser Asp Val Leu Ile Phe Leu Asp Arg Glu Pro Asn Arg Leu Arg Ala
                245             250                 255

Phe Gln Val Ile Glu Thr Gln Asp Pro Pro Arg Arg Leu Ala Leu Thr
                260             265                 270

Pro Ala His Leu Leu Phe Ile Ala Asp Asn His Thr Glu Pro Ala Ala
        275             280             285

His Phe Arg Ala Thr Phe Ala Ser His Val Gln Pro Gly Gln Tyr Val
    290             295             300

Leu Val Ser Gly Val Pro Gly Leu Gln Pro Ala Arg Val Ala Ala Val
305                 310             315                 320

Ser Thr His Val Ala Leu Gly Ser Tyr Ala Pro Leu Thr Arg His Gly
                325             330             335

Thr Leu Val Val Glu Asp Val Val Ala Ser Cys Phe Ala Ala Val Ala
                340             345             350

Asp His His Leu Ala Gln Leu Ala Phe Trp Pro Leu Arg Leu Phe Pro
        355             360             365

Ser Leu Ala Trp Gly Ser Trp Thr Pro Ser Glu Gly Val His Ser Tyr
    370                 375             380

Pro Gln Met Leu Tyr Arg Leu Gly Arg Leu Leu Leu Glu Glu Ser Thr
385                 390             395                 400

Phe His Pro Leu Gly Met Ser Gly Ala Gly Ser
                405                 410
```

<210> 13
<211> 437
<212> PRT
<213> Murine sp.

<400> 13
```
Met Leu Leu Leu Leu Ala Arg Cys Phe Leu Val Ile Leu Ala Ser Ser
  1           5                 10                  15

Leu Leu Val Cys Pro Gly Leu Ala Cys Gly Pro Gly Arg Gly Phe Gly
                20              25                  30

Lys Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys Gln Phe
        35              40                  45

Ile Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg Tyr Glu
    50              55                  60
```

```
Gly Lys Ile Thr Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr Pro Asn
 65              70              75              80

Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly Ala Asp
             85              90              95

Arg Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ala Leu Ala Ile
         100             105             110

Ser Val Met Asn Gln Trp Pro Gly Val Arg Leu Arg Val Thr Glu Gly
         115             120             125

Trp Asp Glu Asp Gly His His Ser Glu Glu Ser Leu His Tyr Glu Gly
     130             135             140

Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg Ser Lys Tyr Gly
145             150             155             160

Met Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr
             165             170             175

Glu Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn Ser Val
             180             185             190

Ala Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Thr Val His Leu
             195             200             205

Glu Gln Gly Gly Thr Lys Leu Val Lys Asp Leu Arg Pro Gly Asp Arg
     210             215             220

Val Leu Ala Ala Asp Asp Gln Gly Arg Leu Leu Tyr Ser Asp Phe Leu
225             230             235             240

Thr Phe Leu Asp Arg Asp Glu Gly Ala Lys Lys Val Phe Tyr Val Ile
             245             250             255

Glu Thr Leu Glu Pro Arg Glu Arg Leu Leu Leu Thr Ala Ala His Leu
         260             265             270

Leu Phe Val Ala Pro His Asn Asp Ser Gly Pro Thr Pro Gly Pro Ser
         275             280             285

Ala Leu Phe Ala Ser Arg Val Arg Pro Gly Gln Arg Val Tyr Val Val
         290             295             300

Ala Glu Arg Gly Gly Asp Arg Arg Leu Leu Pro Ala Ala Val His Ser
305             310             315             320

Val Thr Leu Arg Glu Glu Glu Ala Gly Ala Tyr Ala Pro Leu Thr Ala
             325             330             335

His Gly Thr Ile Leu Ile Asn Arg Val Leu Ala Ser Cys Tyr Ala Val
             340             345             350

Ile Glu Glu His Ser Trp Ala His Arg Ala Phe Ala Pro Phe Arg Leu
             355             360             365
```

```
Ala His Ala Leu Leu Ala Ala Leu Ala Pro Ala Arg Thr Asp Gly Gly
    370             375             380

Gly Gly Gly Ser Ile Pro Ala Ala Gln Ser Ala Thr Glu Ala Arg Gly
385             390             395                 400

Ala Glu Pro Thr Ala Gly Ile His Trp Tyr Ser Gln Leu Leu Tyr His
            405             410                 415

Ile Gly Thr Trp Leu Leu Asp Ser Glu Thr Met His Pro Leu Gly Met
            420             425             430

Ala Val Lys Ser Ser
        435
```

<210> 14
<211> 418
<212> PRT
<213> Brachydanio rerio

<400> 14

```
Met Arg Leu Leu Thr Arg Val Leu Leu Val Ser Leu Leu Thr Leu Ser
  1             5               10                  15

Leu Val Val Ser Gly Leu Ala Cys Gly Pro Gly Arg Gly Tyr Gly Arg
            20              25                  30

Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys Gln Phe Ile
            35              40                  45

Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg Tyr Glu Gly
        50              55              60

Lys Ile Thr Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr Pro Asn Tyr
 65             70              75                  80

Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly Ala Asp Arg
                85              90                  95

Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ser Leu Ala Ile Ser
            100             105                 110

Val Met Asn His Trp Pro Gly Val Lys Leu Arg Val Thr Glu Gly Trp
            115             120                 125

Asp Glu Asp Gly His His Phe Glu Glu Ser Leu His Tyr Glu Gly Arg
        130             135             140

Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Lys Ser Lys Tyr Gly Thr
145             150             155                 160

Leu Ser Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr Glu
            165             170                 175

Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn Ser Val Ala
            180             185                 190
```

Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Leu Val Ser Leu Gln
    195   200   205

Asp Gly Gly Gln Lys Ala Val Lys Asp Leu Asn Pro Gly Asp Lys Val
    210   215   220

Leu Ala Ala Asp Ser Ala Gly Asn Leu Val Phe Ser Asp Phe Ile Met
225   230   235   240

Phe Thr Asp Arg Asp Ser Thr Thr Arg Arg Val Phe Tyr Val Ile Glu
          245   250   255

Thr Gln Glu Pro Val Glu Lys Ile Thr Leu Thr Ala Ala His Leu Leu
          260   265   270

Phe Val Leu Asp Asn Ser Thr Glu Asp Leu His Thr Met Thr Ala Ala
      275   280   285

Tyr Ala Ser Ser Val Arg Ala Gly Gln Lys Val Met Val Val Asp Asp
    290   295   300

Ser Gly Gln Leu Lys Ser Val Ile Val Gln Arg Ile Tyr Thr Glu Glu
305   310   315   320

Gln Arg Gly Ser Phe Ala Pro Val Thr Ala His Gly Thr Ile Val Val
          325   330   335

Asp Arg Ile Leu Ala Ser Cys Tyr Ala Val Ile Glu Asp Gln Gly Leu
          340   345   350

Ala His Leu Ala Phe Ala Pro Ala Arg Leu Tyr Tyr Tyr Val Ser Ser
      355   360   365

Phe Leu Ser Pro Lys Thr Pro Ala Val Gly Pro Met Arg Leu Tyr Asn
    370   375   380

Arg Arg Gly Ser Thr Gly Thr Pro Gly Ser Cys His Gln Met Gly Thr
385   390   395   400

Trp Leu Leu Asp Ser Asn Met Leu His Pro Leu Gly Met Ser Val Asn
          405   410   415

Ser Ser

<210> 15
<211> 475
<212> PRT
<213> Homo sapiens

<220>
<223> Xaa at position 463 is any or unknown amino acid

<400> 15
Met Leu Leu Leu Ala Arg Cys Leu Leu Leu Val Leu Val Ser Ser Leu
  1   5   10   15

Leu Val Cys Ser Gly Leu Ala Cys Gly Pro Gly Arg Gly Phe Gly Lys
            20   25   30

Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys Gln Phe Ile
        35   40   45

Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg Tyr Glu Gly
    50   55   60

Lys Ile Ser Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr Pro Asn Tyr
65   70   75   80

Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly Ala Asp Arg
            85   90   95

Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ala Leu Ala Ile Ser
        100   105   110

Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg Val Thr Glu Gly Trp
        115   120   125

Asp Glu Asp Gly His His Ser Glu Glu Ser Leu His Tyr Glu Gly Arg
    130   135   140

Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg Ser Lys Tyr Gly Met
145   150   155   160

Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr Glu
            165   170   175

Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn Ser Val Ala
            180   185   190

Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Thr Val His Leu Glu
        195   200   205

Gln Gly Gly Thr Lys Leu Val Lys Asp Leu Ser Pro Gly Asp Arg Val
    210   215   220

Leu Ala Ala Asp Asp Gln Gly Arg Leu Leu Tyr Ser Asp Phe Leu Thr
225   230   235   240

Phe Leu Asp Arg Asp Asp Gly Ala Lys Lys Val Phe Tyr Val Ile Glu
            245   250   255

Thr Arg Glu Pro Arg Glu Arg Leu Leu Leu Thr Ala Ala His Leu Leu
        260   265   270

Phe Val Ala Pro His Asn Asp Ser Ala Thr Gly Glu Pro Glu Ala Ser
        275   280   285

Ser Gly Ser Gly Pro Pro Ser Gly Gly Ala Leu Gly Pro Arg Ala Leu
    290   295   300

Phe Ala Ser Arg Val Arg Pro Gly Gln Arg Val Tyr Val Val Ala Glu
305   310   315   320

Arg Asp Gly Asp Arg Arg Leu Leu Pro Ala Ala Val His Ser Val Thr
                325   330   335

Leu Ser Glu Glu Ala Ala Gly Ala Tyr Ala Pro Leu Thr Ala Gln Gly
                340   345   350

Thr Ile Leu Ile Asn Arg Val Leu Ala Ser Cys Tyr Ala Val Ile Glu
            355   360   365

Glu His Ser Trp Ala His Arg Ala Phe Ala Pro Phe Arg Leu Ala His
        370   375   380

Ala Leu Leu Ala Ala Leu Ala Pro Ala Arg Thr Asp Arg Gly Gly Asp
385   390   395   400

Ser Gly Gly Gly Asp Arg Gly Gly Gly Gly Arg Val Ala Leu Thr
                405   410   415

Ala Pro Gly Ala Ala Asp Ala Pro Gly Ala Gly Ala Thr Ala Gly Ile
            420   425   430

His Trp Tyr Ser Gln Leu Leu Tyr Gln Ile Gly Thr Trp Leu Leu Asp
        435   440   445

Ser Glu Ala Leu His Pro Leu Gly Met Ala Val Lys Ser Ser Xaa Ser
    450   455   460

Arg Gly Ala Gly Gly Gly Ala Arg Glu Gly Ala
465   470   475

<210> 16
<211> 411
<212> PRT
<213> Homo sapiens

<400> 16
Met Ser Pro Ala Arg Leu Arg Pro Arg Leu His Phe Cys Leu Val Leu
    1   5   10   15

Leu Leu Leu Leu Val Val Pro Ala Ala Trp Gly Cys Gly Pro Gly Arg
            20   25   30

Val Val Gly Ser Arg Arg Arg Pro Pro Arg Lys Leu Val Pro Leu Ala
            35   40   45

Tyr Lys Gln Phe Ser Pro Asn Val Pro Glu Lys Thr Leu Gly Ala Ser
    50   55   60

Gly Arg Tyr Glu Gly Lys Ile Ala Arg Ser Ser Glu Arg Phe Lys Glu
65   70   75   80

Leu Thr Pro Asn Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn
                85   90   95

Thr Gly Ala Asp Arg Leu Met Thr Gln Arg Cys Lys Asp Arg Leu Asn
            100   105   110

```
Ser Leu Ala Ile Ser Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg
        115         120             125

Val Thr Glu Gly Trp Asp Glu Asp Gly His His Ser Glu Glu Ser Leu
        130             135             140

His Tyr Glu Gly Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg
145             150             155                 160

Asn Lys Tyr Gly Leu Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp
            165             170             175

Trp Val Tyr Tyr Glu Ser Lys Ala His Val His Cys Ser Val Lys Ser
            180             185             190

Glu His Ser Ala Ala Ala Lys Thr Gly Gly Cys Phe Pro Ala Gly Ala
        195             200             205

Gln Val Arg Leu Glu Ser Gly Ala Arg Val Ala Leu Ser Ala Val Arg
        210             215             220

Pro Gly Asp Arg Val Leu Ala Met Gly Glu Asp Gly Ser Pro Thr Phe
225             230             235                 240

Ser Asp Val Leu Ile Phe Leu Asp Arg Glu Pro His Arg Leu Arg Ala
            245             250             255

Phe Gln Val Ile Glu Thr Gln Asp Pro Pro Arg Arg Leu Ala Leu Thr
            260             265             270

Pro Ala His Leu Leu Phe Thr Ala Asp Asn His Thr Glu Pro Ala Ala
        275             280             285

Arg Phe Arg Ala Thr Phe Ala Ser His Val Gln Pro Gly Gln Tyr Val
290             295             300

Leu Val Ala Gly Val Pro Gly Leu Gln Pro Ala Arg Val Ala Ala Val
305             310             315                 320

Ser Thr His Val Ala Leu Gly Ala Tyr Ala Pro Leu Thr Lys His Gly
            325             330             335

Thr Leu Val Val Glu Asp Val Val Ala Ser Cys Phe Ala Ala Val Ala
            340             345             350

Asp His His Leu Ala Gln Leu Ala Phe Trp Pro Leu Arg Leu Phe His
            355             360             365

Ser Leu Ala Trp Gly Ser Trp Thr Pro Gly Glu Gly Val His Trp Tyr
        370             375             380

Pro Gln Leu Leu Tyr Arg Leu Gly Arg Leu Leu Leu Glu Glu Gly Ser
385             390             395                 400

Phe His Pro Leu Gly Met Ser Gly Ala Gly Ser
            405             410
```

<210> 17
<211> 396
<212> PRT
<213> Homo sapiens

<400> 17
```
Met Ala Leu Leu Thr Asn Leu Leu Pro Leu Cys Cys Leu Ala Leu Leu
 1               5                  10                  15

Ala Leu Pro Ala Gln Ser Cys Gly Pro Gly Arg Gly Pro Val Gly Arg
            20                  25                  30

Arg Arg Tyr Ala Arg Lys Gln Leu Val Pro Leu Leu Tyr Lys Gln Phe
        35                  40                  45

Val Pro Gly Val Pro Glu Arg Thr Leu Gly Ala Ser Gly Pro Ala Glu
    50                  55                  60

Gly Arg Val Ala Arg Gly Ser Glu Arg Phe Arg Asp Leu Val Pro Asn
65                  70                  75                  80

Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Ser Gly Ala Asp
            85                  90                  95

Arg Leu Met Thr Glu Arg Cys Lys Glu Arg Val Asn Ala Leu Ala Ile
            100                 105                 110

Ala Val Met Asn Met Trp Pro Gly Val Arg Leu Arg Val Thr Glu Gly
        115                 120                 125

Trp Asp Glu Asp Gly His His Ala Gln Asp Ser Leu His Tyr Glu Gly
    130                 135                 140

Arg Ala Leu Asp Ile Thr Thr Ser Asp Arg Asp Arg Asn Lys Tyr Gly
145                 150                 155                 160

Leu Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr
            165                 170                 175

Glu Ser Arg Asn His Val His Val Ser Val Lys Ala Asp Asn Ser Leu
            180                 185                 190

Ala Val Arg Ala Gly Gly Cys Phe Pro Gly Asn Ala Thr Val Arg Leu
            195                 200                 205

Trp Ser Gly Glu Arg Lys Gly Leu Arg Glu Leu His Arg Gly Asp Trp
    210                 215                 220

Val Leu Ala Ala Asp Ala Ser Gly Arg Val Val Pro Thr Pro Val Leu
225                 230                 235                 240

Leu Phe Leu Asp Arg Asp Leu Gln Arg Arg Ala Ser Phe Val Ala Val
            245                 250                 255

Glu Thr Glu Trp Pro Pro Arg Lys Leu Leu Leu Thr Pro Trp His Leu
            260                 265                 270
```

Val Phe Ala Ala Arg Gly Pro Ala Pro Ala Pro Gly Asp Phe Ala Pro
     275   280   285

Val Phe Ala Arg Arg Leu Arg Ala Gly Asp Ser Val Leu Ala Pro Gly
     290   295   300

Gly Asp Ala Leu Arg Pro Ala Arg Val Ala Arg Val Ala Arg Glu Glu
305   310   315   320

Ala Val Gly Val Phe Ala Pro Leu Thr Ala His Gly Thr Leu Leu Val
           325   330   335

Asn Asp Val Leu Ala Ser Cys Tyr Ala Val Leu Glu Ser His Gln Trp
           340   345   350

Ala His Arg Ala Phe Ala Pro Leu Arg Leu Leu His Ala Leu Gly Ala
         355   360   365

Leu Leu Pro Gly Gly Ala Val Gln Pro Thr Gly Met His Trp Tyr Ser
     370   375   380

Arg Leu Leu Tyr Arg Leu Ala Glu Glu Leu Leu Gly
385   390   395

<210> 18
<211> 416
<212> PRT
<213> Brachydanio rerio

<400> 18
Met Asp Val Arg Leu His Leu Lys Gln Phe Ala Leu Leu Cys Phe Ile
  1   5   10   15

Ser Leu Leu Leu Thr Pro Cys Gly Leu Ala Cys Gly Pro Gly Arg Gly
         20   25   30

Tyr Gly Lys Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys
         35   40   45

Gln Phe Ile Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Lys
     50   55   60

Tyr Glu Gly Lys Ile Thr Arg Asn Ser Glu Arg Phe Lys Glu Leu Ile
65   70   75   80

Pro Asn Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Asn
         85   90   95

Ala Asp Arg Leu Met Thr Lys Arg Cys Lys Asp Lys Leu Asn Ser Leu
         100   105   110

Ala Ile Ser Val Met Asn His Trp Pro Gly Val Lys Leu Arg Val Thr
         115   120   125

Glu Gly Trp Asp Glu Asp Gly His His Leu Glu Glu Ser Leu His Tyr
         130   135   140

Glu Gly Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Lys Ser Lys
145   150   155   160

Tyr Gly Met Leu Ser Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val
                165   170   175

Tyr Tyr Glu Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn
            180   185   190

Ser Val Ala Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Gly Thr Val
            195   200   205

Thr Leu Gly Asp Gly Thr Arg Lys Pro Ile Lys Asp Leu Lys Val Gly
    210   215   220

Asp Arg Val Leu Ala Ala Asp Glu Lys Gly Asn Val Leu Ile Ser Asp
225   230   235   240

Phe Ile Met Phe Ile Asp His Asp Pro Thr Thr Arg Arg Gln Phe Ile
            245   250   255

Val Ile Glu Thr Ser Glu Pro Phe Thr Lys Leu Thr Leu Thr Ala Ala
            260   265   270

His Leu Val Phe Val Gly Asn Ser Ser Ala Ala Ser Gly Ile Thr Ala
    275   280   285

Thr Phe Ala Ser Asn Val Lys Pro Gly Asp Thr Val Leu Val Trp Glu
    290   295   300

Asp Thr Cys Glu Ser Leu Lys Ser Val Thr Val Lys Arg Ile Tyr Thr
305   310   315   320

Glu Glu His Glu Gly Ser Phe Ala Pro Val Thr Ala His Gly Thr Ile
            325   330   335

Ile Val Asp Gln Val Leu Ala Ser Cys Tyr Ala Val Ile Glu Asn His
            340   345   350

Lys Trp Ala His Trp Ala Phe Ala Pro Val Arg Leu Cys His Lys Leu
    355   360   365

Met Thr Trp Leu Phe Pro Ala Arg Glu Ser Asn Val Asn Phe Gln Glu
    370   375   380

Asp Gly Ile His Trp Tyr Ser Asn Met Leu Phe His Ile Gly Ser Trp
385   390   395   400

Leu Leu Asp Arg Asp Ser Phe His Pro Leu Gly Ile Leu His Leu Ser
            405   410   415

<210> 19
<211> 1416
<212> DNA
<213> Drosophila sp.

<220>
<221> CDS
<222> (1)..(1413)

<400> 19

atg	gat	aac	cac	agc	tca	gtg	cct	tgg	gcc	agt	gcc	gcc	agt	gtc	acc	48
Met	Asp	Asn	His	Ser	Ser	Val	Pro	Trp	Ala	Ser	Ala	Ala	Ser	Val	Thr	
1				5					10					15		

tgt	ctc	tcc	ctg	gga	tgc	caa	atg	cca	cag	ttc	cag	ttc	cag	ttc	cag	96
Cys	Leu	Ser	Leu	Gly	Cys	Gln	Met	Pro	Gln	Phe	Gln	Phe	Gln	Phe	Gln	
			20					25					30			

ctc	caa	atc	cgc	agc	gag	ctc	cat	ctc	cgc	aag	ccc	gca	aga	aga	acg	144
Leu	Gln	Ile	Arg	Ser	Glu	Leu	His	Leu	Arg	Lys	Pro	Ala	Arg	Arg	Thr	
		35					40					45				

caa	acg	atg	cgc	cac	att	gcg	cat	acg	cag	cgt	tgc	ctc	agc	agg	ctg	192
Gln	Thr	Met	Arg	His	Ile	Ala	His	Thr	Gln	Arg	Cys	Leu	Ser	Arg	Leu	
	50					55					60					

acc	tct	ctg	gtg	gcc	ctg	ctg	ctg	atc	gtc	ttg	ccg	atg	gtc	ttt	agc	240
Thr	Ser	Leu	Val	Ala	Leu	Leu	Leu	Ile	Val	Leu	Pro	Met	Val	Phe	Ser	
65					70					75					80	

ccg	gct	cac	agc	tgc	ggt	cct	ggc	cga	gga	ttg	ggt	cgt	cat	agg	gcg	288
Pro	Ala	His	Ser	Cys	Gly	Pro	Gly	Arg	Gly	Leu	Gly	Arg	His	Arg	Ala	
			85					90					95			

cgc	aac	ctg	tat	ccg	ctg	gtc	ctc	aag	cag	aca	att	ccc	aat	cta	tcc	336
Arg	Asn	Leu	Tyr	Pro	Leu	Val	Leu	Lys	Gln	Thr	Ile	Pro	Asn	Leu	Ser	
			100					105					110			

gag	tac	acg	aac	agc	gcc	tcc	gga	cct	ctg	gag	ggt	gtg	atc	cgt	cgg	384
Glu	Tyr	Thr	Asn	Ser	Ala	Ser	Gly	Pro	Leu	Glu	Gly	Val	Ile	Arg	Arg	
		115					120					125				

gat	tcg	ccc	aaa	ttc	aag	gac	ctc	gtg	ccc	aac	tac	aac	agg	gac	atc	432
Asp	Ser	Pro	Lys	Phe	Lys	Asp	Leu	Val	Pro	Asn	Tyr	Asn	Arg	Asp	Ile	
	130					135					140					

ctt	ttc	cgt	gac	gag	gaa	ggc	acc	gga	gcg	gat	ggc	ttg	atg	agc	aag	480
Leu	Phe	Arg	Asp	Glu	Glu	Gly	Thr	Gly	Ala	Asp	Gly	Leu	Met	Ser	Lys	
145					150					155					160	

cgc	tgc	aag	gag	aag	cta	aac	gtg	ctg	gcc	tac	tcg	gtg	atg	aac	gaa	528
Arg	Cys	Lys	Glu	Lys	Leu	Asn	Val	Leu	Ala	Tyr	Ser	Val	Met	Asn	Glu	
			165					170					175			

tgg	ccc	ggc	atc	cgg	ctg	ctg	gtc	acc	gag	agc	tgg	gac	gag	gac	tac	576
Trp	Pro	Gly	Ile	Arg	Leu	Leu	Val	Thr	Glu	Ser	Trp	Asp	Glu	Asp	Tyr	
			180					185					190			

cat	cac	ggc	cag	gag	tcg	ctc	cac	tac	gag	ggc	cga	gcg	gtg	acc	att	624
His	His	Gly	Gln	Glu	Ser	Leu	His	Tyr	Glu	Gly	Arg	Ala	Val	Thr	Ile	
		195					200					205				

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gcc acc tcc gat cgc gac cag tcc aaa tac ggc atg ctc gct cgc ctg    672
Ala Thr Ser Asp Arg Asp Gln Ser Lys Tyr Gly Met Leu Ala Arg Leu
    210                 215             220

gcc gtc gag gct gga ttc gat tgg gtc tcc tac gtc agc agg cgc cac    720
Ala Val Glu Ala Gly Phe Asp Trp Val Ser Tyr Val Ser Arg Arg His
225                 230             235                 240

atc tac tgc tcc gtc aag tca gat tcg tcg atc agt tcc cac gtg cac    768
Ile Tyr Cys Ser Val Lys Ser Asp Ser Ser Ile Ser Ser His Val His
                245             250                 255

ggc tgc ttc acg ccg gag agc aca gcg ctg ctg gag agt gga gtc cgg    816
Gly Cys Phe Thr Pro Glu Ser Thr Ala Leu Leu Glu Ser Gly Val Arg
            260             265             270

aag ccg ctc ggc gag ctc tct atc gga gat cgt gtt ttg agc atg acc    864
Lys Pro Leu Gly Glu Leu Ser Ile Gly Asp Arg Val Leu Ser Met Thr
            275             280             285

gcc aac gga cag gcc gtc tac agc gaa gtg atc ctc ttc atg gac cgc    912
Ala Asn Gly Gln Ala Val Tyr Ser Glu Val Ile Leu Phe Met Asp Arg
    290                 295             300

aac ctc gag cag atg caa aac ttt gtg cag ctg cac acg gac ggt gga    960
Asn Leu Glu Gln Met Gln Asn Phe Val Gln Leu His Thr Asp Gly Gly
305                 310             315                 320

gca gtg ctc acg gtg acg ccg gct cac ctg gtt agc gtt tgg cag ccg   1008
Ala Val Leu Thr Val Thr Pro Ala His Leu Val Ser Val Trp Gln Pro
            325             330             335

gag agc cag aag ctc acg ttt gtg ttt gcg cat cgc atc gag gag aag   1056
Glu Ser Gln Lys Leu Thr Phe Val Phe Ala His Arg Ile Glu Glu Lys
            340             345             350

aac cag gtg ctc gta cgg gat gtg gag acg ggc gag ctg agg ccc cag   1104
Asn Gln Val Leu Val Arg Asp Val Glu Thr Gly Glu Leu Arg Pro Gln
            355             360             365

cga gtg gtc aag ttg ggc agt gtg cgc agt aag ggc gtg gtc gcg ccg   1152
Arg Val Val Lys Leu Gly Ser Val Arg Ser Lys Gly Val Val Ala Pro
    370                 375             380

ctg acc cgc gag ggc acc att gtg gtc aac tcg gtg gcc gcc agt tgc   1200
Leu Thr Arg Glu Gly Thr Ile Val Val Asn Ser Val Ala Ala Ser Cys
385                 390             395                 400

tat gcg gtg atc aac agt cag tcg ctg gcc cac tgg gga ctg gct ccc   1248
Tyr Ala Val Ile Asn Ser Gln Ser Leu Ala His Trp Gly Leu Ala Pro
                405             410             415

atg cgc ctg ctg tcc acg ctg gag gcg tgg ctg ccc gcc aag gag cag   1296
Met Arg Leu Leu Ser Thr Leu Glu Ala Trp Leu Pro Ala Lys Glu Gln
            420             425             430
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ttg cac agt tcg ccg aag gtg gtg agc tcg gcg cag cag cag aat ggc    1344
Leu His Ser Ser Pro Lys Val Val Ser Ser Ala Gln Gln Gln Asn Gly
        435             440             445

atc cat tgg tat gcc aat gcg ctc tac aag gtc aag gac tac gtg ctg    1392
Ile His Trp Tyr Ala Asn Ala Leu Tyr Lys Val Lys Asp Tyr Val Leu
        450             455             460

ccg cag agc tgg cgc cac gat tga                                    1416
Pro Gln Ser Trp Arg His Asp
465             470
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<210> 20
<211> 471
<212> PRT
<213> Drosophila sp.

<400> 20
Met Asp Asn His Ser Ser Val Pro Trp Ala Ser Ala Ala Ser Val Thr
 1               5                  10                  15

Cys Leu Ser Leu Gly Cys Gln Met Pro Gln Phe Gln Phe Gln Phe Gln
            20                  25                  30

Leu Gln Ile Arg Ser Glu Leu His Leu Arg Lys Pro Ala Arg Arg Thr
        35                  40                  45

Gln Thr Met Arg His Ile Ala His Thr Gln Arg Cys Leu Ser Arg Leu
    50                  55                  60

Thr Ser Leu Val Ala Leu Leu Leu Ile Val Leu Pro Met Val Phe Ser
 65                  70                  75                  80

Pro Ala His Ser Cys Gly Pro Gly Arg Gly Leu Gly Arg His Arg Ala
                85                  90                  95

Arg Asn Leu Tyr Pro Leu Val Leu Lys Gln Thr Ile Pro Asn Leu Ser
            100                 105                 110

Glu Tyr Thr Asn Ser Ala Ser Gly Pro Leu Glu Gly Val Ile Arg Arg
            115                 120                 125

Asp Ser Pro Lys Phe Lys Asp Leu Val Pro Asn Tyr Asn Arg Asp Ile
        130                 135                 140

Leu Phe Arg Asp Glu Glu Gly Thr Gly Ala Asp Gly Leu Met Ser Lys
145                 150                 155                 160

Arg Cys Lys Glu Lys Leu Asn Val Leu Ala Tyr Ser Val Met Asn Glu
                165                 170                 175

Trp Pro Gly Ile Arg Leu Leu Val Thr Glu Ser Trp Asp Glu Asp Tyr
            180                 185                 190

His His Gly Gln Glu Ser Leu His Tyr Glu Gly Arg Ala Val Thr Ile
        195                 200                 205
```

Ala Thr Ser Asp Arg Asp Gln Ser Lys Tyr Gly Met Leu Ala Arg Leu
    210   215   220

Ala Val Glu Ala Gly Phe Asp Trp Val Ser Tyr Val Ser Arg Arg His
225   230   235   240

Ile Tyr Cys Ser Val Lys Ser Asp Ser Ser Ile Ser Ser His Val His
            245   250   255

Gly Cys Phe Thr Pro Glu Ser Thr Ala Leu Leu Glu Ser Gly Val Arg
            260   265   270

Lys Pro Leu Gly Glu Leu Ser Ile Gly Asp Arg Val Leu Ser Met Thr
        275   280   285

Ala Asn Gly Gln Ala Val Tyr Ser Glu Val Ile Leu Phe Met Asp Arg
    290   295   300

Asn Leu Glu Gln Met Gln Asn Phe Val Gln Leu His Thr Asp Gly Gly
305   310   315   320

Ala Val Leu Thr Val Thr Pro Ala His Leu Val Ser Val Trp Gln Pro
            325   330   335

Glu Ser Gln Lys Leu Thr Phe Val Phe Ala His Arg Ile Glu Glu Lys
            340   345   350

Asn Gln Val Leu Val Arg Asp Val Glu Thr Gly Glu Leu Arg Pro Gln
        355   360   365

Arg Val Val Lys Leu Gly Ser Val Arg Ser Lys Gly Val Val Ala Pro
    370   375   380

Leu Thr Arg Glu Gly Thr Ile Val Val Asn Ser Val Ala Ala Ser Cys
385   390   395   400

Tyr Ala Val Ile Asn Ser Gln Ser Leu Ala His Trp Gly Leu Ala Pro
            405   410   415

Met Arg Leu Leu Ser Thr Leu Glu Ala Trp Leu Pro Ala Lys Glu Gln
        420   425   430

Leu His Ser Ser Pro Lys Val Val Ser Ser Ala Gln Gln Gln Asn Gly
        435   440   445

Ile His Trp Tyr Ala Asn Ala Leu Tyr Lys Val Lys Asp Tyr Val Leu
    450   455   460

Pro Gln Ser Trp Arg His Asp
465   470

<210> 21
<211> 221
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: degenerate
     polypeptide sequence

<220>
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<222> (7)
<223> Gly, Ala, Val, Leu, Ile, Phe, Tyr or Trp

<220>
<221> MOD_RES
<222> (9)
<223> Arg, His or Lys

<220>
<221> MOD_RES
<222> (44)
<223> Gly, Ala, Val, Leu, Ile, Ser or Thr

<220>
<221> MOD_RES
<222> (85)
<223> Gly, Ala, Val, Leu, Ile, Ser or Thr

<220>
<221> MOD_RES
<222> (93)
<223> Lys, Arg, His, Asn or Gln

<220>
<221> MOD_RES
<222> (98)
<223> Lys, Arg or His

<220>
<221> MOD_RES ·
<222> (112)
<223> Ser, Thr, Tyr, Trp or Phe

<220>
<221> MOD_RES
<222> (132)
<223> Lys, Arg or His

<220>
<221> MOD_RES
<222> (137)
<223> Met, Cys, Ser or Thr

<220>
<221> MOD_RES
<222> (139)
<223> Gly, Ala, Val, Leu, Ile, Ser or Thr

<220>
<221> MOD_RES
<222> (181)
<223> Leu, Val, Met, Thr or Ser

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<220>
<221> MOD_RES
<222> (183)
<223> His, Phe, Tyr, Ser, Thr, Met or Cys


<220>
<221> MOD_RES
<222> (185)
<223> Gln, Asn, Glu, or Asp


<220>
<221> MOD_RES
<222> (186)
<223> His, Phe, Tyr, Thr, Gln, Asn, Glu or Asp


<220>
<221> MOD-RES
<222> (189)
<223> Gln, Asn, Glu, Asp, Thr, Ser, Met or Cys


<220>
<221> MOD_RES
<222> (191)
<223> Ala, Gly, Cys, Leu, Val or Met


<220>
<221> MOD_RES
<222> (196)
<223> Arg, Lys, Met, Ile, Asn, Asp, Glu, Gln, Ser, Thr or Cys


<220>
<221> MOD_RES
<222> (200)
<223> Arg, Lys, Met or Ile


<220>
<221> MOD_RES
<222> (206)
<223> Ala, Gly, Cys, Asp, Glu, Gln, Asn, Ser, Thr or Met


<220>
<221> MOD_RES
<222> (207)
<223> Ala, Gly, Cys, Asp, Asn, Glu or Gln


<220>
<221> MOD_RES
<222> (209)
<223> Arg, Lys, Met, Ile, Asn, Asp, Glu or Gln


<220>
<221> MOD_RES
<222> (211)
<223> Leu, Val, Met or Ile


<220>
<221> MOD_RES
<222> (212)
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<223> Phe, Tyr, Thr, His or Trp

<220>
<221> MOD_RES
<222> (216)
<223> Ile, Val, Leu or Met

<220>
<221> MOD_RES
<222> (217)
<223> Met, Cys, Ile, Leu, Val, Thr or Ser

<220>
<221> MOD_RES
<222> (219)
<223> Leu, Val, Met, Thr or Ser

<220>
<223> each Xaa may also be any amino acid.

<400> 21
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Cys Gly Pro Gly Arg Gly Xaa Gly Xaa Arg Arg His Pro Lys Lys Leu
 1               5                  10              15

Thr Pro Leu Ala Tyr Lys Gln Phe Ile Pro Asn Val Ala Glu Lys Thr
            20                  25                  30

Leu Gly Ala Ser Gly Arg Tyr Glu Gly Lys Ile Xaa Arg Asn Ser Glu
            35                  40                  45

Arg Phe Lys Glu Leu Thr Pro Asn Tyr Asn Pro Asp Ile Ile Phe Lys
        50                  55                  60

Asp Glu Glu Asn Thr Gly Ala Asp Arg Leu Met Thr Gln Arg Cys Lys
65                  70                  75                  80

Asp Lys Leu Asn Xaa Leu Ala Ile Ser Val Met Asn Xaa Trp Pro Gly
                85                  90                  95

Val Xaa Leu Arg Val Thr Glu Gly Trp Asp Glu Asp Gly His His Xaa
        100                 105                 110

Glu Glu Ser Leu His Tyr Glu Gly Arg Ala Val Asp Ile Thr Thr Ser
        115                 120                 125

Asp Arg Asp Xaa Ser Lys Tyr Gly Xaa Leu Xaa Arg Leu Ala Val Glu
        130                 135                 140

Ala Gly Phe Asp Trp Val Tyr Tyr Glu Ser Lys Ala His Ile His Cys
145                 150                 155                 160

Ser Val Lys Ala Glu Asn Ser Val Ala Ala Lys Ser Gly Gly Cys Phe
                165                 170                 175

Pro Gly Ser Ala Xaa Val Xaa Leu Xaa Xaa Gly Gly Xaa Lys Xaa Val
            180                 185                 190
```

Lys Asp Leu Xaa Pro Gly Asp Xaa Val Leu Ala Ala Asp Xaa Xaa Gly
      195   200   205

Xaa Leu Xaa Xaa Ser Asp Phe Xaa Xaa Phe Xaa Asp Arg
   210   215   220

<210> 22
<211> 167
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: degenerate
     polypeptide sequence

<220>
<221> MOD_RES
<222> (7)
<223> Gly, Ala, Val, Leu, Ile, Pro, Phe or Tyr

<220>
<221> MOD_RES
<222> (8)
<223> Gly, Ala, Val, Leu or Ile

<220>
<221> MOD_RES
<222> (9)
<223> Gly, Ala, Val, Leu, Ile, Lys, His or Arg

<220>
<221> MOD_RES
<222> (12)
<223> Lys, Arg or His

<220>
<221> MOD_RES
<222> (13)
<223> Phe, Trp, Tyr or an amino acid gap

<220>
<221> MOD_RES
<222> (14)
<223> Gly, Ala, Val, Leu, Ile or an amino acid gap

<220>
<221> MOD_RES
<222> (17)
<223> Asn, Gln, His, Arg or Lys

<220>
<221> MOD_RES
<222> (19)
<223> Gly, Ala, Val, Leu, Ile, Ser or Thr

<220>
<221> MOD_RES

<222> (22)
<223> Gly, Ala, Val, Leu, Ile, Ser or Thr

<220>
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<222> (27)
<223> Gly, Ala, Val, Leu, Ile, Ser or Thr

<220>
<221> MOD_RES
<222> (29)
<223> Ser, Thr, Gln or Asn

<220>
<221> MOD_RES
<222> (30)
<223> Met, Cys, Gly, Ala, Val, Leu, Ile, Ser or Thr

<220>
<221> MOD_RES
<222> (31)
<223> Gly, Ala, Val, Leu, Ile or Pro

<220>
<221> MOD_RES
<222> (33)
<223> Arg, His or Lys

<220>
<221> MOD_RES
<222> (40)
<223> Gly, Ala, Val, Leu, Ile, Pro, Arg, His or Lys

<220>
<221> MOD_RES
<222> (41)
<223> Gly, Ala, Val, Leu, Ile, Phe or Tyr

<220>
<221> MOD_RES
<222> (44)
<223> Arg, His or Lys

<220>
<221> MOD_RES
<222> (45)
<223> Gly, Ala, Val, Leu, Ile, Ser or Thr

<220>
<221> MOD_RES
<222> (46)
<223> Thr or Ser

<220>
<221> MOD_RES
<222> (48)
<223> Gly, Ala, Val, Leu, Ile, Asn or Gln

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<220>
<221> MOD_RES
<222> (53)
<223> Arg, His or Lys

<220>
<221> MOD_RES
<222> (54)
<223> Asp or Glu

<220>
<221> MOD_RES
<222> (71)
<223> Ser or Thr

<220>
<221> MOD_RES
<222> (79)
<223> Glu, Asp, Gln or Asn

<220>
<221> MOD_RES
<222> (83)
<223> Glu or Asp

<220>
<221> MOD_RES
<222> (84)
<223> Arg, His or Lys

<220>
<221> MOD_RES
<222> (85)
<223> Gly, Ala, Val, Leu or Ile

<220>
<221> MOD_RES
<222> (87)
<223> Gly, Ala, Val, Leu, Ile, Thr or Ser

<220>
<221> MOD_RES
<222> (95)
<223> Met, Cys, Gln, Asn, Arg, Lys or His

<220>
<221> MOD_RES
<222> (100)
<223> Arg, His or Lys

<220>
<221> MOD_RES
<222> (107)
<223> Trp, Phe, Tyr, Arg, His or Lys

<220>
<221> MOD_RES
<222> (114)
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<223> Gly, Ala, Val, Leu, Ile, Ser, Thr, Tyr or Phe

<220>
<221> MOD_RES
<222> (115)
<223> Gln, Asn, Asp or Glu

<220>
<221> MOD_RES
<222> (116)
<223> Asp or Glu

<220>
<221> MOD_RES
<222> (125)
<223> Gly, Ala, Val, Leu, or Ile

<220>
<221> MOD_RES
<222> (134)
<223> Arg, His or Lys

<220>
<221> MOD_RES
<222> (135)
<223> Asn, Gln, Thr or Ser

<220>
<221> MOD_RES
<222> (139)
<223> Gly, Ala, Val, Leu, Ile, Ser, Thr, Met or Cys

<220>
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<222> (141)
<223> Gly, Ala, Val, Leu, Ile, Thr or Ser

<220>
<221> MOD_RES
<222> (157)
<223> Arg, His or Lys

<220>
<221> MOD_RES
<222> (158)
<223> Asn, Gln, Gly, Ala, Val, Leu or Ile

<220>
<221> MOD_RES
<222> (160)
<223> Gly, Ala, Val, Leu or Ile

<220>
<221> MOD_RES
<222> (162)
<223> Gly, Ala, Val, Leu, Ile, Ser, Thr or Cys

<220>

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<221> MOD_RES
<222> (166)
<223> Gly, Ala, Val, Leu, Ile, Thr or Ser

<220>
<221> MOD_RES
<222> (167)
<223> Asp or Glu

<220>
<223> each Xaa may also be any amino acid.

<400> 22
Cys Gly Pro Gly Arg Gly Xaa Xaa Xaa Arg Arg Xaa Xaa Xaa Pro Lys
 1               5                  10                  15

Xaa Leu Xaa Pro Leu Xaa Tyr Lys Gln Phe Xaa Pro Xaa Xaa Xaa Glu
            20              25              30

Xaa Thr Leu Gly Ala Ser Gly Xaa Xaa Glu Gly Xaa Xaa Xaa Arg Xaa
        35              40                  45

Ser Glu Arg Phe Xaa Xaa Leu Thr Pro Asn Tyr Asn Pro Asp Ile Ile
    50                  55                  60

Phe Lys Asp Glu Glu Asn Xaa Gly Ala Asp Arg Leu Met Thr Xaa Arg
65                  70                  75                  80

Cys Lys Xaa Xaa Xaa Asn Xaa Leu Ala Ile Ser Val Met Asn Xaa Trp
            85                  90                  95

Pro Gly Val Xaa Leu Arg Val Thr Glu Gly Xaa Asp Glu Asp Gly His
            100             105             110

His Xaa Xaa Xaa Ser Leu His Tyr Glu Gly Arg Ala Xaa Asp Ile Thr
        115             120             125

Thr Ser Asp Arg Asp Xaa Xaa Lys Tyr Gly Xaa Leu Xaa Arg Leu Ala
    130             135             140

Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr Glu Ser Xaa Xaa His Xaa
145             150             155             160

His Xaa Ser Val Lys Xaa Xaa
                165


<210> 23
<211> 627
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(624)
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<400> 23
atg tgg aaa tgg ata ctg aca cat tgt gcc tca gcc ttt ccc cac ctg    48
Met Trp Lys Trp Ile Leu Thr His Cys Ala Ser Ala Phe Pro His Leu
 1               5                  10                  15

ccc ggc tgc tgc tgc tgc tgc ttt ttg ttg ctg ttc ttg gtg tct tcc    96
Pro Gly Cys Cys Cys Cys Cys Phe Leu Leu Leu Phe Leu Val Ser Ser
                20                  25                  30

gtc cct gtc acc tgc caa gcc ctt ggt cag gac atg gtg tca cca gag   144
Val Pro Val Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu
            35                  40                  45

gcc acc aac tct tct tcc tcc tcc ttc tcc tct cct tcc agc gcg gga   192
Ala Thr Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly
        50                  55                  60

agg cat gtg cgg agc tac aat cac ctt caa gga gat gtc cgc tgg aga   240
Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg
65                  70                  75                  80

aag cta ttc tct ttc acc aag tac ttt ctc aag att gag aag aac ggg   288
Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly
                85                  90                  95

aag gtc agc ggg acc aag aag gag aac tgc ccg tac agc atc ctg gag   336
Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu
            100                 105                 110

ata aca tca gta gaa atc gga gtt gtt gcc gtc aaa gcc att aac agc   384
Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser
            115                 120                 125

aac tat tac tta gcc atg aac aag aag ggg aaa ctc tat ggc tca aaa   432
Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys
        130                 135                 140

gaa ttt aac aat gac tgt aag ctg aag gag agg ata gag gaa aat gga   480
Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly
145                 150                 155                 160

tac aat acc tat gca tca ttt aac tgg cag cat aat ggg agg caa atg   528
Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met
                165                 170                 175

tat gtg gca ttg aat gga aaa gga gct cca agg aga gga cag aaa aca   576
Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr
                180                 185                 190

cga agg aaa aac acc tct gct cac ttt ctt cca atg gtg gta cac tca   624
Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
        195                 200                 205

tag                                                               627


<210> 24
<211> 208
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<212> PRT
<213> Homo sapiens

<400> 24
Met Trp Lys Trp Ile Leu Thr His Cys Ala Ser Ala Phe Pro His Leu
 1   5   10   15

Pro Gly Cys Cys Cys Cys Cys Phe Leu Leu Leu Phe Leu Val Ser Ser
            20   25   30

Val Pro Val Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu
        35   40   45

Ala Thr Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly
    50   55   60

Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg
65   70   75   80

Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly
            85   90   95

Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu
            100   105   110

Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser
        115   120   125

Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys
    130   135   140

Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly
145   150   155   160

Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met
            165   170   175

Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr
            180   185   190

Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
            195   200   205

<210> 25
<211> 74
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 25
gcgcgcttcg aagcgaggca gccagcgagg gagagagcga gcgggcgagc cggagcgagg 60

aaatcgatgc gcgc   74

<210> 26
<211> 74
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 26
gcgcgcagat ctgggaaagc gcaagagaga gcgcacacgc acacacccgc cgcgcgcact 60

cgggatccgc gcgc   74

<210> 27
<211> 996
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: gene
      activation construct

<400> 27
cgaagcgagg cagccagcga gggagagagc gagcgggcga gccggagcga ggaaatcgaa 60

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